
# 2013 Annual Report

**Fact Sheet:**

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# Introduction and Overall Analysis

## Introduction

The Portuguese Arthroplasty Register (RPA) was created by the Portuguese Society of Orthopaedics and Traumatology (SPOT).
The registry officially started on June 1st 2009.

There were 43944 registries in the period of June 1st 2009 to December 31st 2013.

In the period comprised in this report (January 1st to December 31st 2013), 9223 registers were recorded in RPA.

The fact that the act of registering an arthroplasty is a voluntary act, may mean that the records do not reflect the actual number of arthroplasties that were actually performed, but serves as a sample of the reality of our country.

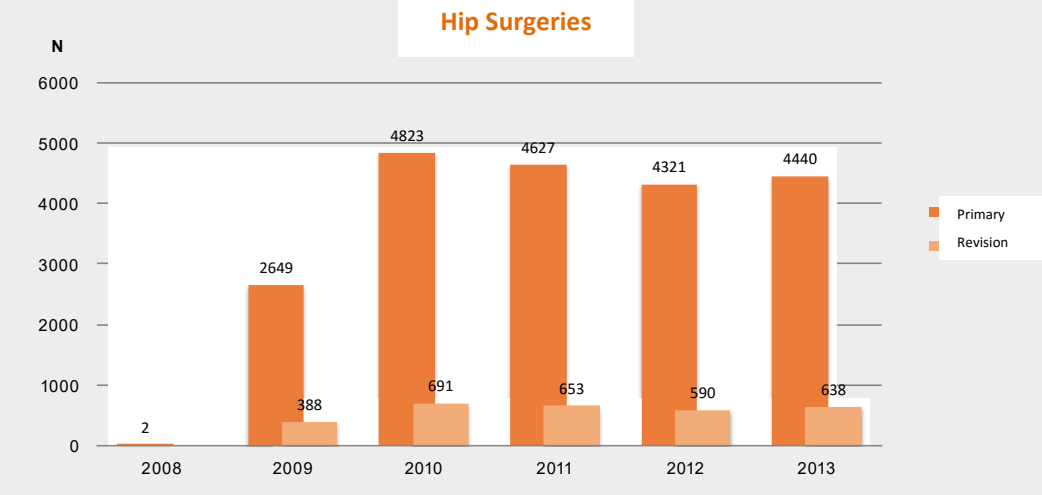
In order for the RPA numbers to reflect reality, we need to commit ourselves to registering all the arthroplasties we perform, or else the register needs to be mandatory in all the hospitals of the country.

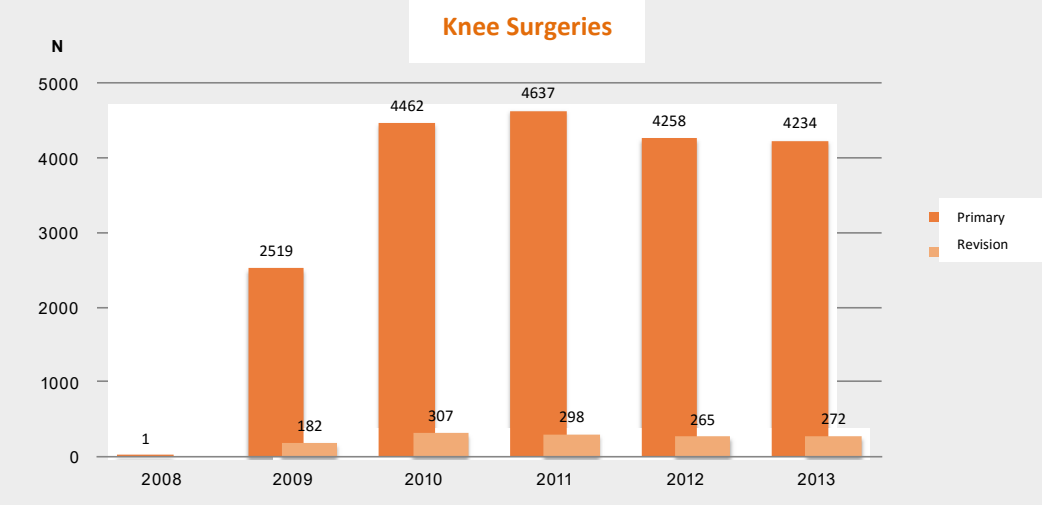
## Overall Analysis

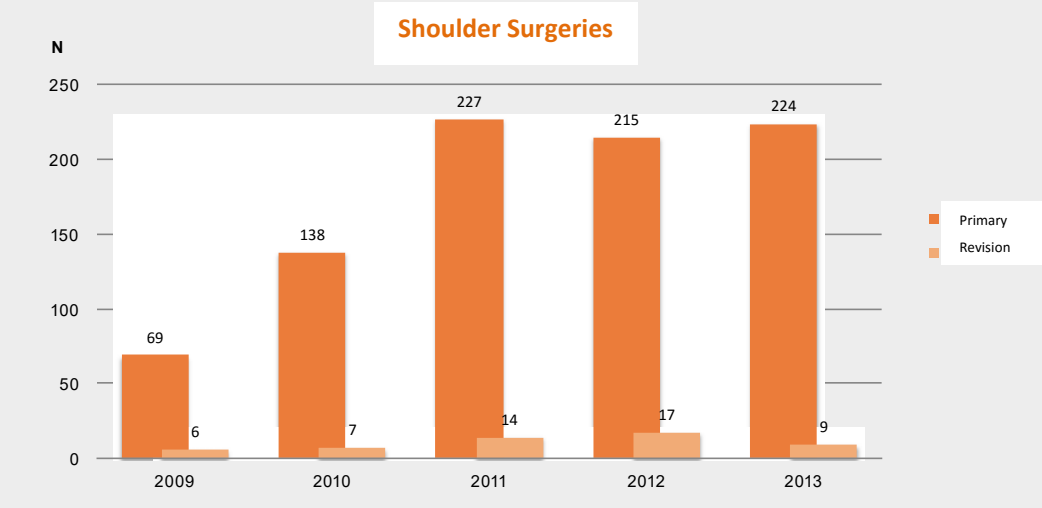
In the period of this report – January 1st to December 31st 2013, 9223 arthroplasties were registered in the Portuguese Arthroplasty Register.

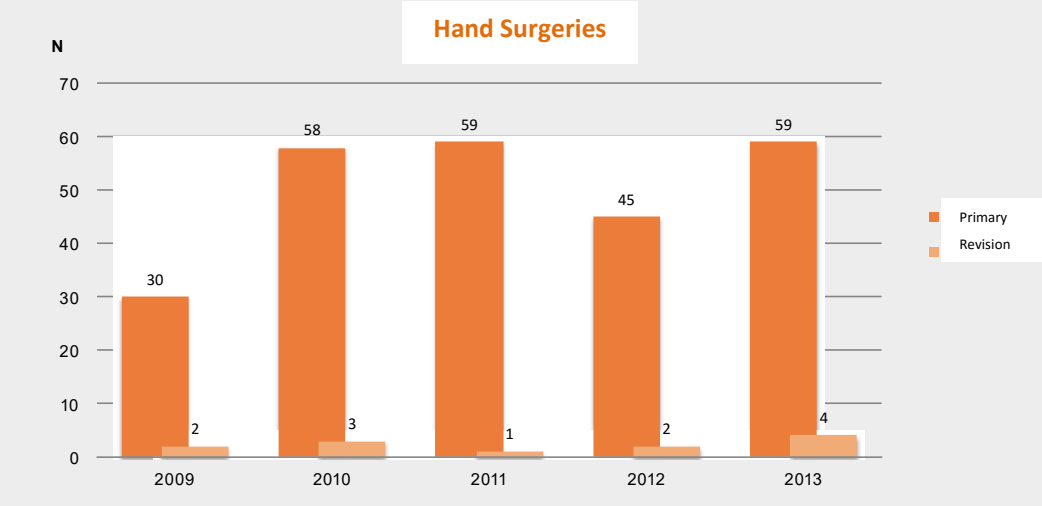
| Anatomical Area: | Primary Surgery: | Revision Surgery: |
|---|---|---|
| Hip | 4440 | 638 |
| Spine | 15 | 0 |
| Elbow | 18 | 3 |
| Knee | 4234 | 272 |
| Shoulder | 224 | 9 |
| Wrist and Hand | 59 | 4 |
| Ankle and Foot | 7 | 0 |
| *Total* | | 9223 |

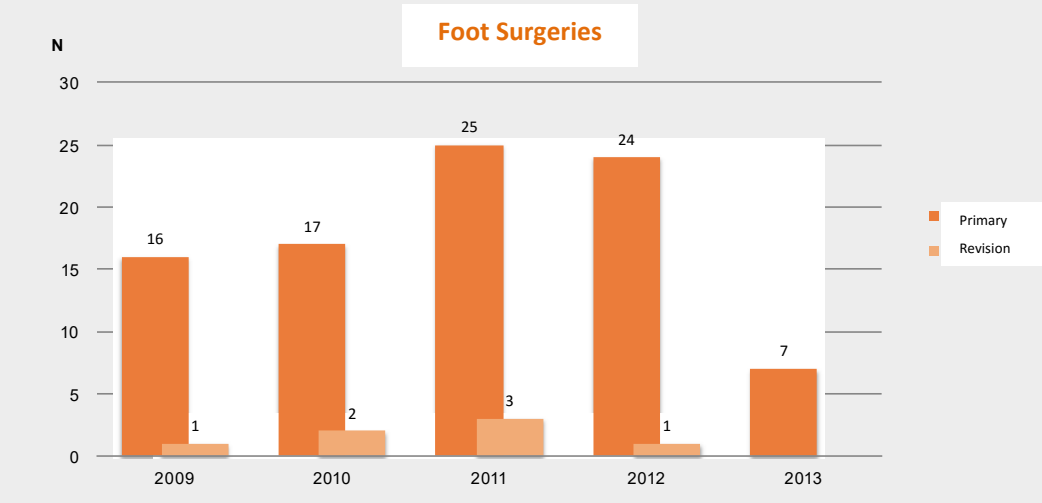
The tables below show the registers by anatomical area recorded since the beginning of RPA, and its evolution until December 31st 2013.

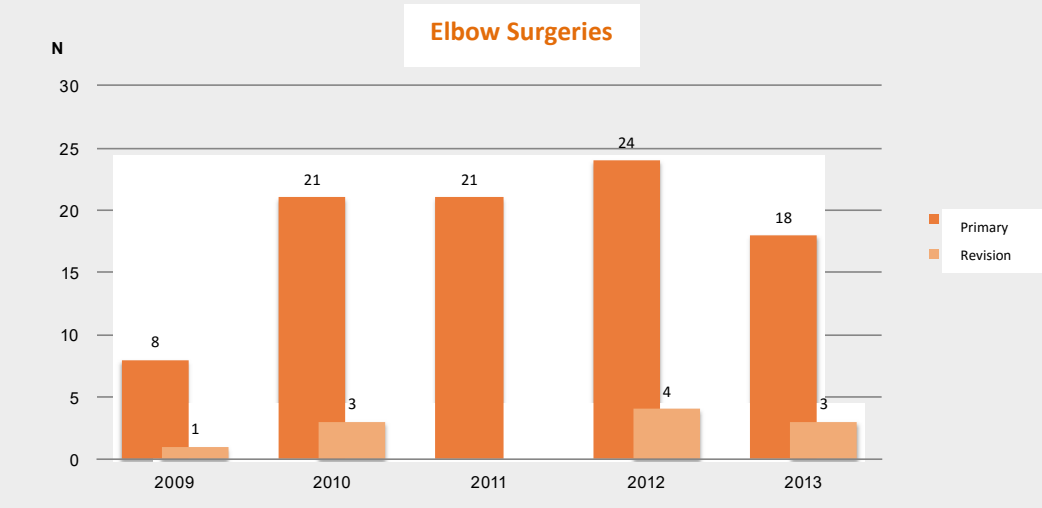


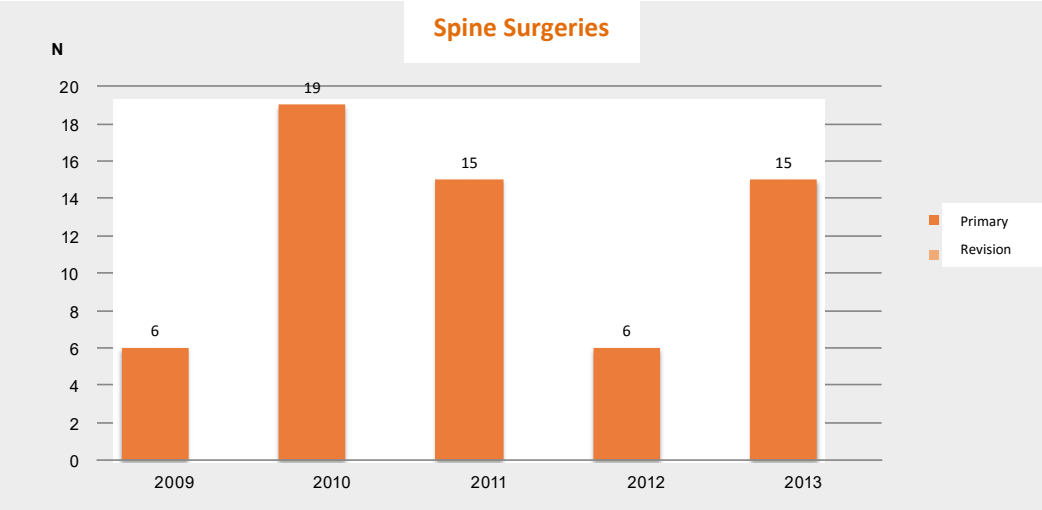




Shoulder Surgeries
N
250
200
150
100
50
0
69
6
138
7
227
14
215
17
224
9
2009
2010
2011
2012
2013
Primary
Revision


Hand Surgeries
N
70
60
50
40
30
20
10
0
30
2
58
3
59
1
45
2
59
4
2009
2010
2011
2012
2013
Primary
Revision


Foot Surgeries
N
30
25
20
15
10
5
0
16
1
17
2
25
3
24
1
7
2009
2010
2011
2012
2013
Primary
Revision


Elbow Surgeries
N
30
25
20
15
10
5
0
8
1
21
3
21
24
4
18
3
2009
2010
2011
2012
2013
Primary
Revision


Spine Surgeries
N
20
18
16
14
12
10
8
6
4
2
0
6
19
15
6
15
2009
2010
2011
2012
2013
Primary
Revision

## Hip - Primary

In the period of January 1st until December 31st 2013 were registered 4440 hip arthroplasties.

**Table 1 – List of the hospitals where the surgeries were performed**

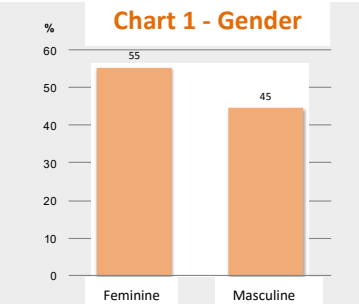
| | *Nr* | % |
|---|---|---|
| Centro Hospitalar Tondela-Viseu | 311 | 7,0 |
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 302 | 6,8 |
| Centro Hospitalar Leiria-Pombal | 291 | 6,6 |
| Centro Hospitalar Baixo Vouga (Aveiro, Estarreja e Águeda) | 281 | 6,3 |
| Hospital Ortopédico de Sant'Ana, Parede | 258 | 5,8 |
| Centro Hospitalar de Trás-os-Montes e Alto Douro ( Vila Real, Chaves e Lamego) | 256 | 5,8 |
| Hospital Escala Braga (ex- H. de S. Marcos) | 215 | 4,8 |
| Hospital da Prelada, Porto | 212 | 4,8 |
| Hospital Curry Cabral, Lisboa | 209 | 4,7 |
| Centro Hospitalar de Setúbal, Hospital Ortopédico Sant'Iago do Outão | 142 | 3,2 |
| Centro Hospitalar do Tâmega e Sousa ( Penafiel e Amarante) | 131 | 3,0 |
| Hospital de Faro | 128 | 2,9 |
| Hospital Nossa Senhora do Rosário, Barreiro | 126 | 2,8 |
| Hospital Garcia de Orta, Almada | 124 | 2,8 |
| Unidade Local de Saúde do Nordeste (Macedo de Cavaleiros e Bragança) | 122 | 2,7 |
| Centro Hospitalar da Póvoa do Varzim - Vila do Conde | 113 | 2,5 |
| Hospital da Cruz Vermelha Portuguesa, Lisboa | 105 | 2,4 |
| Centro Hospitalar Lisboa Norte, Hospital de Santa Maria | 96 | 2,2 |
| Centro Hospitalar do Médio Tejo (Tomar, Abrantes e Torres Novas)) | 95 | 2,1 |
| Unidade Local de Saúde da Guarda - Hospital de Sousa Martins | 82 | 1,8 |
| Centro Hospitalar Universitário de Coimbra (HUC e Covões) | 72 | 1,6 |
| Hospital do Litoral Alentejano, Santiago do Cacém | 70 | 1,6 |
| Centro Hospitalar São João (HSJ e Valongo) | 64 | 1,4 |
| Hospital Distrital de Santarém | 50 | 1,1 |
| Hospital Vila Franca de Xira | 48 | 1,1 |
| Centro Hospitalar de Lisboa Ocidental, Hospital de S. Francisco Xavier | 38 | 0,9 |
| Hospital Distrital de Torres Vedras | 38 | 0,9 |
| Hospital de S. João de Deus, Montemor-o-Novo | 34 | 0,8 |

| | | |
|---|---|---|
| Hospital da Misericórdia da Mealhada | 32 | 0,7 |
| Hospital de Ponta Delgada, Açores | 32 | 0,7 |
| Hospital de Santo Espírito de Angra do Heroísmo, Açores | 32 | 0,7 |
| Hospital Militar Regional I, Porto | 27 | 0,6 |
| Centro Hospitalar do Médio Ave (Santo Tirso e Famalicão) | 25 | 0,6 |
| Misericórdia de Riba d'Ave - Hospital Narciso Ferreira , Famalicão | 24 | 0,5 |
| Clínica de Santo António - Clisa, Reboleira, Amadora | 22 | 0,5 |
| Hospital Distrital da Figueira da Foz | 22 | 0,5 |
| Intercir – Centro Cirúrgico de Coimbra, SA | 22 | 0,5 |
| Unidade Local de Saúde do Baixo Alentejo - Beja | 21 | 0,5 |
| Hospital da Misericórdia de Lousada | 20 | 0,5 |
| Hospital Distrital de Ovar (Hospital Dr. Francisco Zagalo) | 20 | 0,5 |
| Unidade Local de Saúde do Norte Alentejano - Portalegre e Elvas | 19 | 0,4 |
| Hospital da Luz, Lisboa | 15 | 0,3 |
| Hospital Particular do Algarve - Unidade de Gambelas, Faro | 15 | 0,3 |
| HOSPOR - Hospital de Santiago (Espírito Santo Saúde), Setúbal | 14 | 0,3 |
| Hospital da Arrábida (Espírito Santo Saúde), Vila Nova de Gaia | 13 | 0,3 |
| Misericórdia de Marco de Canavezes - Hospital Santa Isabel | 12 | 0,3 |
| Hospital Distrital da Horta, Açores | 9 | 0,2 |
| Hospital Amadora-Sintra (Prof. Dr. Fernando Fonseca) | 8 | 0,2 |
| Centro Hospitalar de Lisboa Central, Hospital de S. José | 7 | 0,2 |
| Unidade Local de Saúde de Castelo Branco - Hospital Amato Lusitano | 4 | 0,1 |
| Centro Hospitalar de Vila Nova de Gaia e Espinho | 3 | 0,1 |
| Hospital da Ven. O. Terc. de S. Francisco, Porto | 3 | 0,1 |
| Centro Hospitalar do Alto Ave (Guimarães e Fafe) | 2 | 0,0 |
| HPP Norte - H. Privado dos Clérigos e H. Privado da Boavista, Porto | 2 | 0,0 |
| Clínica do Bom Jesus, Ponta Delgada, S. Miguel, Açores | 1 | 0,0 |
| Unidade Local de Saúde de Matosinhos - Hospital de Pedro Hispano | 1 | 0,0 |
| ***Total*** | **4440** | **100,0** |

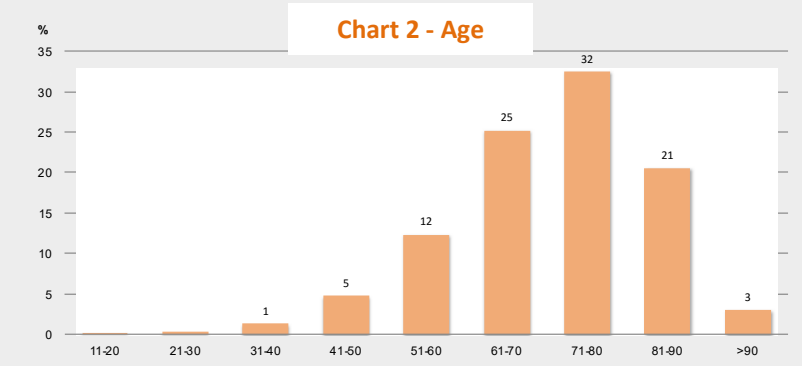
Table 2 shows the composition of the surgical team.

| **Table 2 – Surgical team** | | |
|---|---|---|
| | ***N*** | **%** |
| ***Degree of the surgeon*** | | |
| Assistant | 884 | 19,9 |
| Head of Department | 524 | 11,8 |
| Junior Surgeon | 6 | 0,1 |
| Senior Surgeon | 356 | 8,0 |
| Graduate Surgeon | 1727 | 38,9 |
| Fellow/Scholar | 1 | 0,0 |
| Resident | 941 | 21,2 |
| | | |
| ***Degree of the first help:*** | | |
| Assistant | 1210 | 27,3 |
| Head of Department | 412 | 9,3 |
| Junior Surgeon | 6 | 0,1 |
| Senior Surgeon | 374 | 8,4 |
| Graduate Surgeon | 1811 | 40,8 |
| Fellow/Scholar | 13 | 0,3 |
| Resident | 613 | 13,8 |

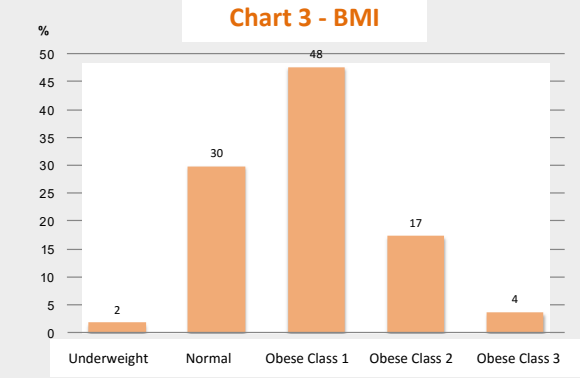
Following, we have the chart of the distribution of the patients by gender.



The age distribution is presented in chart 2, where one can see a predominance of the following age groups – 61-70 and 71-80.

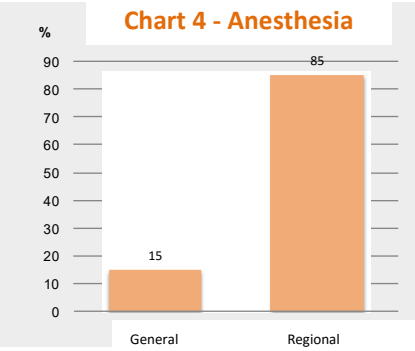



The Body Mass Index of the patients who underwent hip arthroplasty is registered in Chart nr. 3.

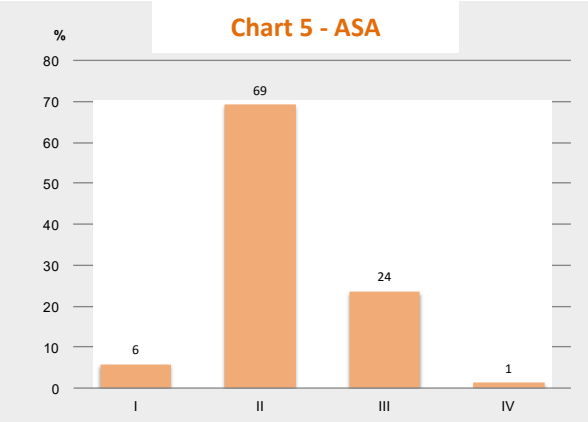


| Table 3 – Demographic sample Identification | | |
|---|---|---|
| | ***N*** | **%** |
| ***Gender*** | | |
| Feminine | 2460 | 55,4 |
| Masculine | 1980 | 44,6 |
| | | |
| ***AGE*** | | |
| 11-20 | 3 | 0,1 |
| 21-30 | 11 | 0,2 |
| 31-40 | 57 | 1,3 |
| 41-50 | 210 | 4,7 |
| 51-60 | 548 | 12,4 |
| 61-70 | 1118 | 25,2 |
| 71-80 | 1441 | 32,5 |
| 81-90 | 913 | 20,6 |
| >90 | 135 | 3,0 |
| | | |
| ***BMI*** | | |
| Underweight | 75 | 1,7 |
| Normal | 1311 | 29,9 |
| Obese Class 1 | 2087 | 47,5 |
| Obese Class 2 | 759 | 17,3 |
| Obese Class 3 | 158 | 3,6 |

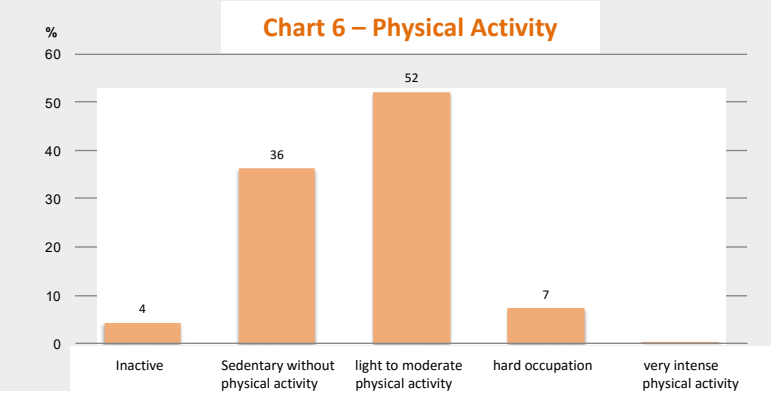
The type of anesthetics used in hip arthroplasties can be found in chart nr. 4, where it is evident the predominance of the regional type of anesthesia.



The ASA peri-operative risk of the patients who underwent hip arthroplasty was the following:



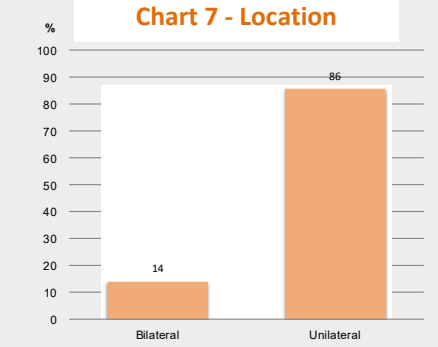

The level of physical activity of the patients who underwent surgery is presented in Chart nr. 6 below.



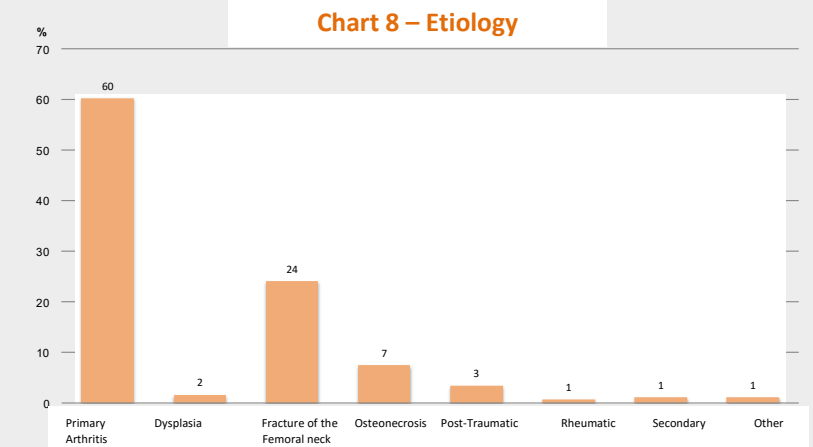
| Table 4 – Identification of the procedure | | |
|---|---|---|
| | ***N*** | **%** |
| ***Anesthesia*** | | |
| General | 655 | 14,8 |
| Regional | 3776 | 85,2 |
| | | |
| ***ASA*** | | |
| I | 262 | 5,9 |
| II | 3070 | 69,2 |
| III | 1047 | 23,6 |
| IV | 56 | 1,3 |
| | | |
| ***Physical activity*** | | |
| Inactive or dependent | 184 | 4,3 |
| Sedentary without any compensatory physical activity | 1551 | 36,2 |
| Light to moderate physical activity | 2231 | 52,1 |
| Hard occupation: physical activity as a hobby | 309 | 7,2 |
| Very intense physical activity: contact or radical sports | 7 | 0,2 |
| | | |
| ***Financial coverage*** | | |
| Private | 88 | 2,0 |
| Insurance | 29 | 0,7 |
| National Health System | 4008 | 91,0 |
| Sub-system | 277 | 6,3 |

Regarding the paying entity, the National Health System is still the main entity, as far as the payment of the arthroplasty is concerned.

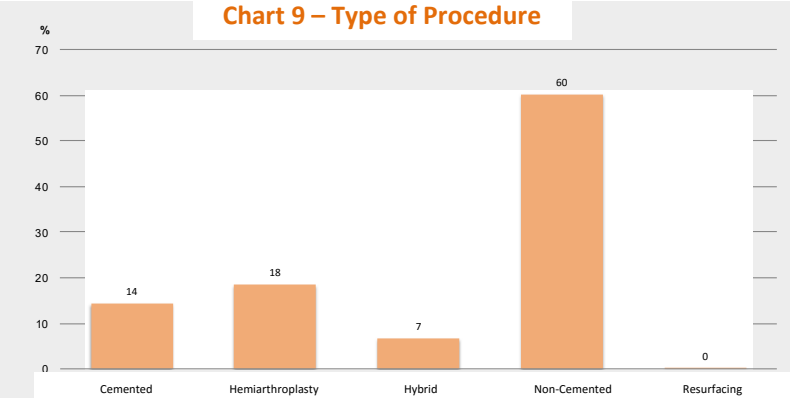
Chart nr. 7 below reflects the location (unilateral or bilateral), of the surgical procedure.



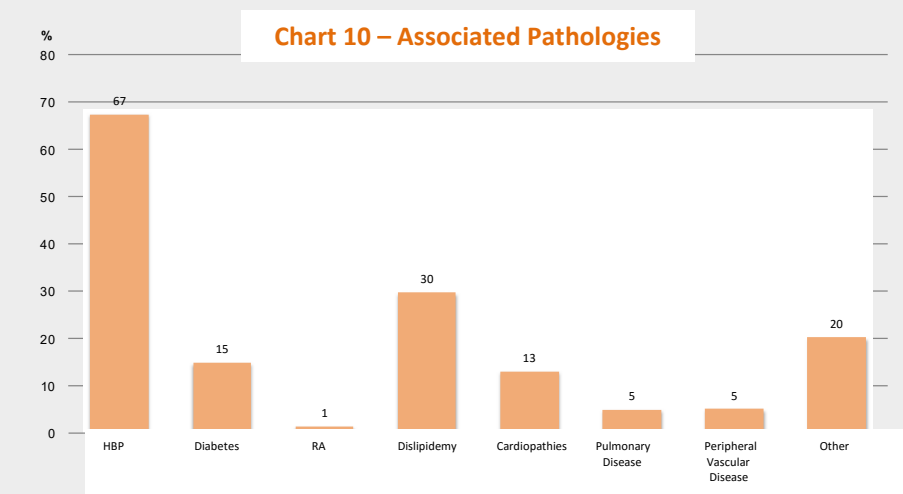

In the etiology we can observe the predominance of the primary arthritis as the main reason for surgery (60%), immediately followed by the fractures of the femoral neck which was the cause in 24% of the cases.




The main type of procedure continues to be the non-cemented arthroplasty.




The predominant pathology in the comorbidities is high blood pressure, followed by dislipidemy, diabetes and cardiopathies.




| Table 5 – Characterization of the Disease | | |
|---|---|---|
| | ***N*** | **%** |
| ***Location*** | | |
| Bilateral | 628 | 14,2 |
| Unilateral | 3806 | 85,8 |
| | | |
| ***Side*** | | |
| Right | 2293 | 51,7 |
| Left | 2141 | 48,3 |

| | | |
|---|---|---|
| ***Previous surgery*** | | |
| No | 4236 | 95,5 |
| Yes | 198 | 4,5 |
| | | |
| ***Degree of Difficulty*** | | |
| Complex | 201 | 4,5 |
| Simple | 4233 | 95,5 |
| | | |
| ***Etiology*** | | |
| Primary arthritis | 2674 | 60,3 |
| Dysplasia | 72 | 1,6 |
| Fracture of the femoral neck | 1069 | 24,1 |
| Osteonecrosis | 329 | 7,4 |
| Post-Traumatic | 152 | 3,4 |
| Rheumatic | 35 | ,8 |
| Secondary to childhood / adolescence disease | 51 | 1,2 |
| Other | 51 | 1,2 |
| | | |
| ***Type of Procedure*** | | |
| Cemented | 638 | 14,4 |
| Hemiarthroplasty | 820 | 18,5 |
| Hybrid | 299 | 6,7 |
| Non-cemented | 2672 | 60,3 |
| Resurfacing | 4 | ,1 |
| | | |
| ***Associated pathologies*** | | |
| HBP | 2996 | 67,5 |
| Diabetes | 661 | 14,9 |
| RA | 64 | 1,4 |
| Dislipidemy | 1318 | 29,7 |
| Cardiopathies | 583 | 13,1 |
| Lung Disease | 222 | 5,0 |
| Peripheral vascular disease | 226 | 5,1 |
| Other | 888 | 20,2 |

Note: There may be more than one associated pathology per patient.

The existence of a previous surgery is less common, and is limited to the osteosynthesis of fractures, in cases of secondary arthritis to trauma.

As far as the position of the patient during surgery is concerned, the lateral position is still the preferred positioning.

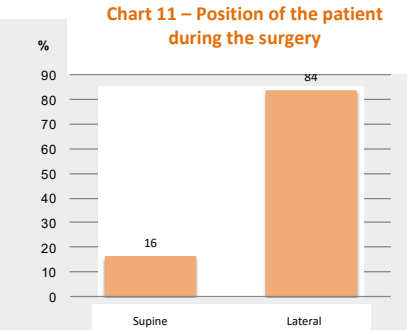
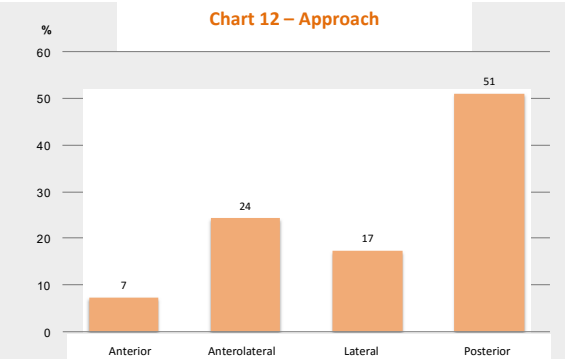



Chart nr. 12 shows the approach used in primary hip arthroplasties, where it is evident that the posterior approach was the predominant one.




The length of the incision varies between 11 and 18 centimeters (Chart nr. 13).

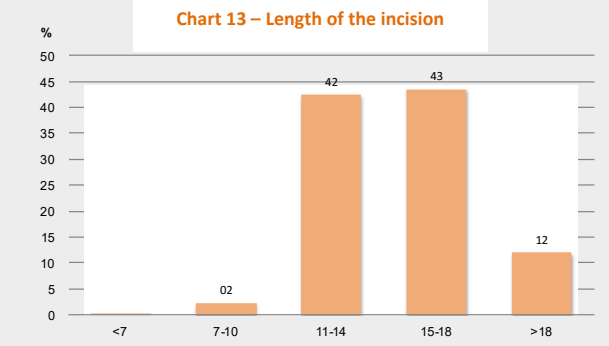
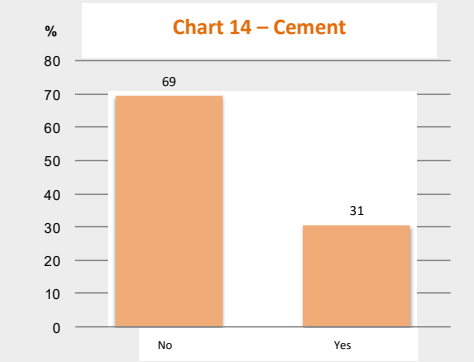
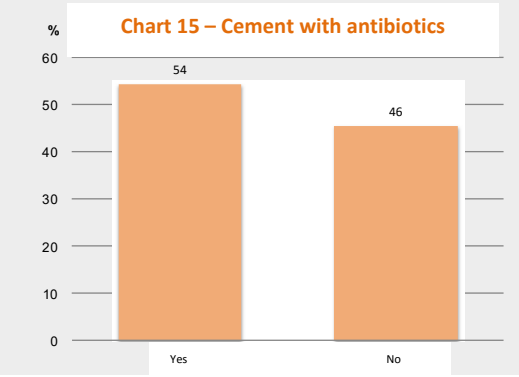


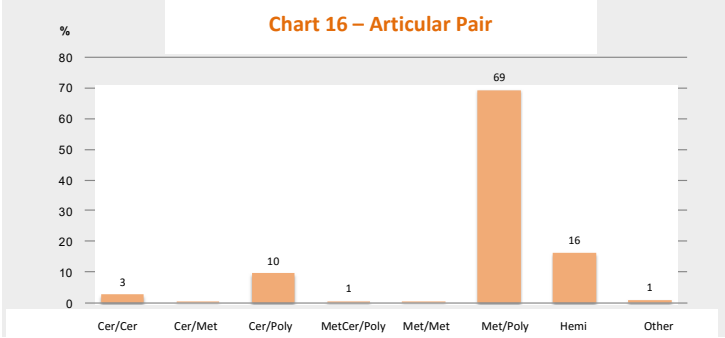

Chart nr. 14 shows the usage of bone cement in total hip arthroplasties, with a predominance of 69% of non-cemented arthroplasties.



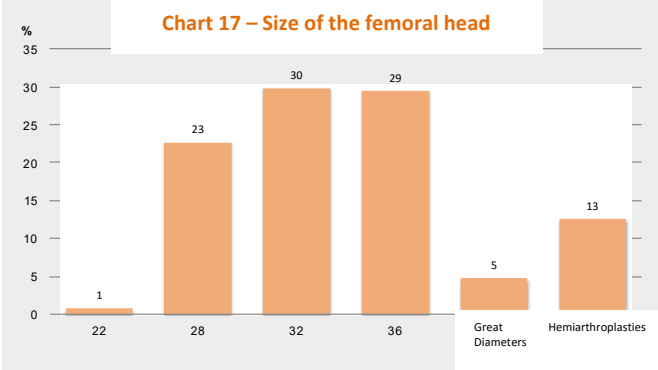

Cement with antibiotics was used in 54% of the cemented arthroplasties.



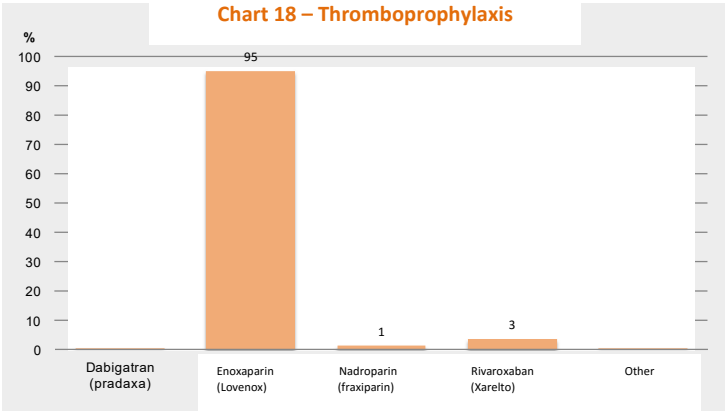

The articular pair Metal/Polyethylene was the most used (in 69% of the cases).




When it comes to the size of the femoral head, one can see that the most commonly used sizes were: 32, 36 and 28 mm.

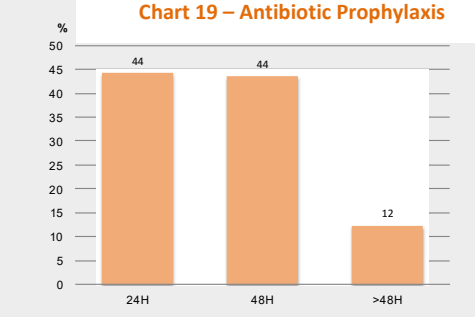



Thromboprophylaxis is systematic, as can be seen below, and enoxaparin continues to be the most widely used drug (95%) followed by rivaroxaban (3%).



Antibiotic prophylaxis is carried out in 99.8% of hip arthroplasties, mainly for a period of up to 48 hours, and the most widely used antibiotics is cefazolin.

Chart 19 – Antibiotic Prophylaxis




| Table 6 - Surgery | | |
|---|---|---|
| | ***N*** | **%** |
| ***Position*** | | |
| Supine | 723 | 16,3 |
| Lateral | 3708 | 83,7 |
| | | |
| ***Approach*** | | |
| Anterior | 325 | 7,3 |
| Anterolateral | 1077 | 24,3 |
| Lateral | 765 | 17,3 |
| Posterior | 2264 | 51,1 |
| | | |
| ***Number of incisions*** | | |
| 1 | 4377 | 99,9 |
| 2 | 5 | 0,1 |
| | | |
| ***Length of the incision*** | | |
| <7 | 2 | 0,0 |
| 7-10 | 94 | 2,2 |
| 11-14 | 1803 | 42,4 |
| 15-18 | 1849 | 43,5 |
| >18 | 507 | 11,9 |
| | | |
| ***Osteotomy*** | | |

| | | |
|---|---|---|
| No | 4134 | 95,6 |
| Yes | 192 | 4,4 |
| | | |
| ***Cement*** | | |
| No | 3079 | 69,4 |
| Yes | 1355 | 30,6 |
| If yes, with antibiotics ? | | |
| Yes | 738 | *54,4* |
| No | 618 | *45,6* |
| | | |
| ***Graft*** | | |
| No | 4055 | 98,2 |
| Yes | 76 | 1,8 |
| | | |
| ***Articular Pair*** | | |
| Ceramics/Ceramics | 115 | 2,7 |
| Ceramics/Metal | 9 | 0,2 |
| Ceramics/Polyethylene | 410 | 9,6 |
| Metal with ceramics/Polyethylene | 26 | 0,6 |
| Metal/Metal | 16 | 0,4 |
| Metal/Polyethylene | 2952 | 69,2 |
| Hemiarthroplasties | 692 | 16,2 |
| Other | 44 | 1,0 |
| | | |
| ***Size of the femoral head*** | | |
| 22 | 33 | 0,8 |
| 28 | 974 | 22,7 |
| 32 | 1281 | 29,8 |
| 36 | 1264 | 29,4 |
| Great diameters | 205 | 4,8 |
| Hemiarthroplasties | 539 | 12,5 |
| | | |
| ***Cementation technique*** | | |
| Femoral | 1271 | |
| Acetabular | 835 | |

| | | |
|---|---|---|
| ***VTE Prophylaxis*** | | |
| Mechanic | 3 | 0,1 |
| Chemical | 4412 | 99,6 |
| Dabigatran (Pradaxa) | 9 | *0,2* |
| Enoxaparin (Lovenox) | 4194 | *95,1* |
| Nadroparin (fraxiparin) | 53 | *1,2* |
| Rivaroxaban (Xarelto) | 154 | *3,5* |
| Other | 2 | *0,0* |
| Without prophylaxis | 14 | 0,3 |
| | | |
| ***Antibiotics Prophylaxis*** | | |
| No | 7 | 0,2 |
| Yes | 4422 | 99,8 |
| If yes, for how long? | | |
| 24H | 1953 | *44,2* |
| 48H | 1923 | *43,5* |
| >48H | 543 | *12,3* |
| | | |
| ***Antibiotics*** | | |
| Cefazoline | 2571 | 58,5 |
| Cefuroxime | 475 | 10,8 |
| Ceftazidime | 47 | 1,1 |
| Other | 1305 | 29,7 |

Next, we present the tables with the materials used in hip arthroplasties.

The table below presents the non-cemented stems used.

| Non-cemented stems | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 687 |
| | Polar Stem | 625 |
| | Proxy Plus | 57 |
| | Nanos | 4 |
| | SMR Revision Hip | 1 |
| DePuy | | 560 |
| | Corail | 534 |
| | Silent | 16 |
| | S-Rom | 6 |
| | Proxima | 2 |
| | Kar (Corail de revisão) | 2 |
| BIOMET | | 541 |
| | Taperloc | 364 |
| | Aura | 98 |
| | Art | 76 |
| | Toplock | 1 |
| | Oxford monobloco | 1 |
| | Conelock | 1 |
| ZIMMER | | 239 |
| | CLS Spotorno | 187 |
| | Versys | 30 |
| | Fitmore | 12 |
| | Wagner SL monobloco | 5 |
| | Wagner Cónica | 2 |
| | Revitan | 2 |
| | ML-Taper Kinectiv | 1 |
| LIMA | | 224 |
| | Fit | 135 |
| | H-Max | 86 |
| | Collo-MIS | 3 |
| LAFITT | | 196 |
| | LGK | 93 |
| | NEXFIT | 73 |

| | | |
|---|---|---|
| | Selfitt | 30 |
| STRYKER | | 164 |
| | ABG II | 162 |
| | Symax | 1 |
| | ABG mod. | 1 |
| PERMEDICA | | 83 |
| | EXACTA | 83 |
| MedContech | | 39 |
| | U2 | 39 |
| SAMO | | 24 |
| | Mistral | 24 |
| FH Orthopedics | | 24 |
| | Esop mod. | 24 |
| EVOLUTIS | | 17 |
| | OPALE II | 9 |
| | STEMSYS | 8 |
| WRIGHT | | 15 |
| | Profemur | 14 |
| | Conserve Plus | 1 |
| MBA | | 13 |
| | Linea | 6 |
| | Furlong (não cimentada) | 6 |
| | Cormet | 1 |
| LINK | | 5 |
| | MP-Link | 5 |
| PETER-BRHEM | | 3 |
| | MRP-Titan | 3 |
| B BRAUN | | 3 |
| | Excia | 3 |
| TRAIBER | | 2 |
| | Apsis | 2 |
| SEM | | 1 |
| | Iramis | 1 |
| OHST | | 1 |
| | Ribbeck | 1 |

| | | |
|---|---|---|
| MEDACTA | | 1 |
| | Ami Stem | 1 |
| ***Total*** | | **2842** |

The table below has a list of all the cemented stems used.

| Cemented stems | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| ZIMMER | | 340 |
| | Muller | 294 |
| | Versys LD/FX | 45 |
| | CPT | 1 |
| BIOMET | | 203 |
| | Taperloc | 126 |
| | Arpege | 42 |
| | Art | 35 |
| SMITH & NEPHEW | | 182 |
| | Muller | 135 |
| | Polar Stem | 47 |
| DePuy | | 109 |
| | Corail | 108 |
| | C-Stem | 1 |
| MBA | | 56 |
| | Furlong | 56 |
| STRYKER | | 55 |
| | ABG II | 36 |

| | | |
|---|---|---|
| | Exeter V40 | 19 |
| LINK | | 54 |
| | Classic-Plus | 54 |
| LAFITT | | 40 |
| | Muller | 6 |
| | Blocfitt | 34 |
| B BRAUN | | 39 |
| | Excia cim. | 39 |
| PERMEDICA | | 33 |
| | SL SELF-LOCKING | 28 |
| | EXACTA | 5 |
| LIMA | | 26 |
| | H-Max C | 17 |
| | Logica | 9 |
| SAMO | | 3 |
| | LC | 2 |
| | Elittica | 1 |
| WRIGHT | | 2 |
| | Profemur | 2 |
| MedContech | | 2 |
| | U2 | 2 |
| ***Total*** | | **1144** |

This table has the list of non-cemented acetabular cups used.

| Non-cemented acetabular cups | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 656 |
| | Ep-Fit Plus | 449 |
| | R3 | 199 |
| | BHR | 4 |
| | Polar dupla mobilidade (Tandem) | 3 |

| | | |
|---|---|---|
| | Reflection | 1 |
| DePuy | | 630 |
| | Pinnacle | 400 |
| | Pinacle Spirofit (roscado) | 211 |
| | Duraloc | 8 |
| | Pinnacle Bantan | 6 |
| | Delta-Motion (gr. Diam. c/c) | 5 |
| BIOMET | | 530 |
| | Spidercup | 163 |
| | Rimcup | 158 |
| | Exceed | 127 |
| | Regenerex Ringloc (Metal Trabecular) | 49 |
| | Avantage (dupla mob.) | 31 |
| | Captiv | 1 |
| | Batcup | 1 |
| ZIMMER | | 250 |
| | Allofit | 91 |
| | Trilogy | 76 |
| | Cedior | 58 |
| | TMT (Metal Trabecular) | 13 |
| | MMC | 4 |
| | Maxera-cup | 3 |
| | CLS Expansiv | 3 |
| | Continuum | 2 |
| LIMA | | 220 |
| | Delta | 219 |
| | TT (Metal Trabecular) | 1 |
| STRYKER | | 190 |
| | Trident PSL | 176 |
| | ABG | 14 |
| LAFITT | | 147 |
| | LGK | 91 |
| | Fitback | 34 |
| | Cupfitt | 15 |

| | | |
|---|---|---|
| | Dupla-Mobilidade | 7 |
| PERMEDICA | | 115 |
| | JUMP | 115 |
| MedContech | | 39 |
| | U2 | 39 |
| WRIGHT | | 36 |
| | Procotyl | 35 |
| | Conserve Plus | 1 |
| FH Orthopedics | | 24 |
| | Atlas IIIP | 24 |
| MBA | | 7 |
| | Dynacup | 4 |
| | Cormet | 3 |
| EVOLUTIS | | 4 |
| | CAPTIV | 4 |
| B BRAUN | | 3 |
| | Plasmacup | 3 |
| TRAIBER | | 2 |
| | Xaloc | 2 |
| SAMO | | 1 |
| | Duofit | 1 |
| PETER-BRHEM | | 1 |
| | MRS | 1 |
| MEDACTA | | 1 |
| | Versafitt | 1 |
| ***Total*** | | **2856** |

The table below represents the cemented acetabular cups used.

| Cemented acetabular cups | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| ZIMMER | | 272 |
| | Muller | 272 |
| SMITH & NEPHEW | | 117 |

| | | |
|---|---|---|
| | Muller | 96 |
| | Reflection | 21 |
| BIOMET | | 105 |
| | Muller low profile | 53 |
| | Apollo | 34 |
| | Arcom XL | 17 |
| | Fredom (constrictivo) | 1 |
| LINK | | 93 |
| | Muller | 16 |
| | Snap-fit | 77 |
| DePuy | | 29 |
| | Tri-lock | 26 |
| | Poli ciment. (Ultima, Muller) | 3 |
| LAFITT | | 26 |
| | Muller | 26 |
| PERMEDICA | | 19 |
| | JUMP | 19 |
| STRYKER | | 15 |
| | Exeter low profile | 9 |
| | Contemporary | 6 |
| LIMA | | 6 |
| | Cemented Cup (tipo Muller) | 6 |
| MBA | | 5 |
| | Furlong Cup | 4 |
| | Cúpula Autocentrante | 1 |
| Groupe Lepine | | 2 |
| | Lefevre retentif | 2 |
| B BRAUN | | 1 |
| | Bicontact | 1 |
| ***Total*** | | **690** |

The following table has the list of the femoral heads used.

| Heads | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |

| | | |
|---|---|---|
| SMITH & NEPHEW | | 859 |
| | CrCo | 396 |
| | Cerâmica | 177 |
| | Oxinium | 100 |
| | Sist. Uni ou Bipolar/biarticular | 96 |
| | Inox | 81 |
| | BHR | 9 |
| BIOMET | | 723 |
| | CrCo | 557 |
| | Cerâmica | 38 |
| | Cab. Bipolar | 100 |
| | Magnum M2a( Gr. Diam.) | 27 |
| | Freedom | 1 |
| ZIMMER | | 524 |
| | Cerâmica | 35 |
| | Inox (Protasul) | 265 |
| | Cab. Bipolar | 31 |
| | CrCo (Durasul/Versys) | 180 |
| | Metasul Metal | 13 |
| DePuy | | 518 |
| | Cab. Bipolar | 1 |
| | Articul-EZE | 184 |
| | Articul-EZE Metal | 169 |
| | Cerâmica Delta-Motion | 164 |
| LIMA | | 214 |
| | CrCo | 184 |
| | Cerâmica | 19 |
| | Cab. Bipolar (Lock) | 11 |
| STRYKER | | 211 |
| | LFIT V40 | 195 |
| | Exeter bipolar UHR | 6 |
| | Colos Modulares | 6 |
| | Cerâmica (alumina) | 4 |
| LAFITT | | 202 |
| | Cerâmica | 14 |

| | | |
|---|---|---|
| | Cab. Bipolar | 17 |
| | Sist. Lafitt CrCo | 162 |
| | Gr. Diam. | 9 |
| LINK | | 73 |
| | CrCo | 73 |
| MBA | | 45 |
| | CrCo | 16 |
| | Gr. Diam. | 24 |
| | Cupball | 3 |
| | Cab. Bipolar/Biarticular | 2 |
| B BRAUN | | 41 |
| | CrCo | 5 |
| | Cab. Bipolar | 36 |
| MedContech | | 40 |
| | U2 | 40 |
| WRIGHT | | 35 |
| | Cerâmica | 9 |
| | CrCo Wright Lineage | 26 |
| SAMO | | 29 |
| | Cab. Bipolar | 2 |
| | Sist. Ellittica | 27 |
| FH Orthopedics | | 25 |
| | CrCo | 8 |
| | Inox | 2 |
| | Cab. Bipolar (Pharo) | 15 |
| PETER-BRHEM | | 4 |
| | MRP | 4 |
| TRAIBER | | 2 |
| | CrCo | 2 |
| SEM | | 1 |
| | CrCo | 1 |
| MEDACTA | | 1 |
| | CrCo | 1 |
| ***Total*** | | **3547** |

The table below shows the liner or insert used in the arthroplasties recorded in the register.

| Liner or Insert (Acetabular lining) | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 598 |
| | Ep Fit Plus Poli XLPE | 420 |
| | R3 XLPE | 150 |
| | Cerâmica | 16 |
| | Reflection Rex-Poli XLPE | 9 |
| | R3 M-o-M | 3 |
| DePuy | | 524 |
| | Poli Marathon | 472 |
| | Cerâmico | 44 |
| | Poli Marathon Batan | 4 |
| | Poli Enduron | 2 |
| | Poli Constrictivo | 1 |
| | ASR | 1 |
| BIOMET | | 497 |
| | Ringlock Arcom | 312 |
| | Exceed Arcon - XL | 93 |
| | Ringlock Spidercup | 39 |
| | Exceed E-Poly | 25 |
| | Exceed Cerâmica | 10 |
| | Arcom M2a | 6 |
| | Ringlock Cerâmica | 4 |
| | Ringlock Metal | 3 |
| | Ringlock Constrained | 3 |
| | IQL 3V | 1 |
| | Alize | 1 |
| ZIMMER | | 293 |
| | Poli Longevity Crosslink | 96 |
| | Poli Cedior Alpha Crosslink | 57 |
| | Dupla-Mobilidade | 33 |
| | Poli Trilogy | 36 |
| | Metasul Metal | 35 |
| | Cerâmica | 11 |

| | | |
|---|---|---|
| | Poli Continuum TT | 19 |
| | Poli CLS Spotorno Expansivo | 4 |
| | Poli Cedior Kappa | 2 |
| LIMA | | 187 |
| | Poli X-Lima | 182 |
| | Dupla-Mobilidade | 2 |
| | Cerâmica | 2 |
| | Metal | 1 |
| STRYKER | | 176 |
| | Trident X3 | 172 |
| | Trident Crossfire | 4 |
| LAFITT | | 130 |
| | Poli Crosslink LGK | 95 |
| | Dupla-Mobilidade | 2 |
| | Poli Cupfit | 33 |
| MedContech | | 40 |
| | Poli U2 | 40 |
| WRIGHT | | 38 |
| | Poli | 36 |
| | Cerâmica | 2 |
| MBA | | 9 |
| | Poli | 9 |
| FH Orthopedics | | 5 |
| | Poli | 3 |
| | Poli Restrictivo | 2 |
| B BRAUN | | 3 |
| | Poli Plasmacup | 3 |
| TRAIBER | | 2 |
| | Poli Xaloc | 2 |
| MEDACTA | | 1 |
| | Poli | 1 |
| LINK | | 1 |
| | Top | 1 |
| ***Total*** | | **2504** |

This table shows the monoblock hemiarthroplasties used.

| Monoblock Hemiarthroplasties | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SURGIVAL | | 165 |
| | Thompson | 90 |
| | Moore | 75 |
| BIOMET | | 58 |
| | Thompson | 30 |
| | Moore | 28 |
| B BRAUN | | 32 |
| | Thompson | 15 |
| | Moore | 17 |
| STRYKER | | 29 |
| | Thompson | 17 |
| | Moore | 12 |
| ZIMMER | | 16 |
| | Thompson | 7 |
| | Moore | 9 |
| LAFITT | | 14 |
| | Thompson | 2 |
| | Moore | 12 |
| IMPOL | | 6 |
| | Thompson | 1 |
| | Moore | 5 |
| DOWNS | | 3 |
| | Moore | 3 |
| ***Total*** | | **323** |

## Hip - Revision

In the period comprised by this report 638 revision hip arthroplasties were recorded in the Portuguese Arthroplasty Register.

Below, we list the hospitals in which these surgeries were performed.

Table 1 – List of Hospitals

| | *N* | % |
|---|---|---|
| Hospital da Prelada, Porto | 82 | 12,9 |
| Centro Hospitalar Tondela-Viseu | 78 | 12,2 |
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 54 | 8,5 |
| Centro Hospitalar de Trás-os-Montes e Alto Douro ( Vila Real, Chaves e Lamego) | 53 | 8,3 |
| Hospital Escala Braga (ex- H. de S. Marcos) | 47 | 7,4 |
| Centro Hospitalar Leiria-Pombal | 46 | 7,2 |
| Centro Hospitalar de Setúbal, Hospital Ortopédico Sant'lago do Outão | 41 | 6,4 |
| Hospital Ortopédico de Sant'Ana, Parede | 37 | 5,8 |
| Hospital Curry Cabral, Lisboa | 35 | 5,5 |
| Centro Hospitalar Baixo Vouga (Aveiro, Estarreja e Águeda) | 28 | 4,4 |
| Hospital Garcia de Orta, Almada | 26 | 4,1 |
| Hospital Particular do Algarve - Unidade de Gambelas, Faro | 17 | 2,7 |
| Centro Hospitalar do Tâmega e Sousa ( Penafiel e Amarante) | 10 | 1,6 |
| Centro Hospitalar da Póvoa do Varzim - Vila do Conde | 9 | 1,4 |
| Hospital Militar Regional I, Porto | 9 | 1,4 |
| Centro Hospitalar Universitário de Coimbra (HUC e Covões) | 8 | 1,3 |
| Hospital da Cruz Vermelha Portuguesa, Lisboa | 7 | 1,1 |
| Hospital Nossa Senhora do Rosário, Barreiro | 7 | 1,1 |
| Hospital de Faro | 6 | 0,9 |
| Unidade Local de Saúde da Guarda - Hospital de Sousa Martins | 5 | 0,8 |
| Centro Hospitalar Lisboa Norte, Hospital de Santa Maria | 4 | 0,6 |
| Hospital da Arrábida (Espírito Santo Saúde), Vila Nova de Gaia | 3 | 0,5 |
| Hospital da Luz, Lisboa | 3 | 0,5 |
| Hospital de Santo Espírito de Angra do Heroísmo, Açores | 3 | 0,5 |

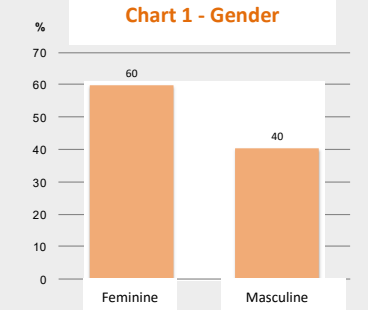
| | | |
|---|---|---|
| Hospital Distrital de Ovar (Hospital Dr. Francisco Zagalo) | 3 | 0,5 |
| Hospital do Litoral Alentejano, Santiago do Cacém | 3 | 0,5 |
| Centro Hospitalar São João (HSJ e Valongo) | 2 | 0,3 |
| Hospital da Misericórdia da Mealhada | 2 | 0,3 |
| Hospital de Ponta Delgada, Açores | 2 | 0,3 |
| Hospital de S. João de Deus, Montemor-o-Novo | 2 | 0,3 |
| Hospital Distrital de Torres Vedras | 2 | 0,3 |
| Centro Hospitalar de Lisboa Central, Hospital de S. José | 1 | 0,2 |
| Centro Hospitalar de Lisboa Ocidental, Hospital de S. Francisco Xavier | 1 | 0,2 |
| Hospital da Ven. O. Terc. de S. Francisco, Porto | 1 | 0,2 |
| Hospital Amadora-Sintra (Prof. Dr. Fernando Fonseca) | 1 | 0,2 |
| ***Total*** | **638** | **100,0** |

Table 2 relates to the composition of the surgical team.

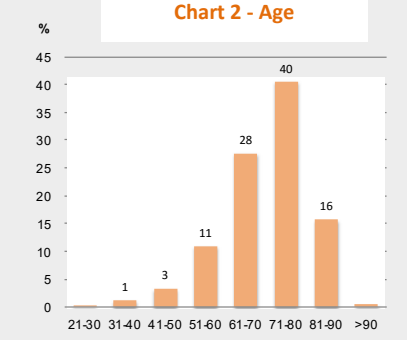
Table 2 – Surgical team

| | ***N*** | **%** |
|---|---|---|
| ***Degree/Level of the Surgeon*** | | |
| Assistant | 156 | 24,5 |
| Head of Department | 86 | 13,5 |
| Senior Surgeon | 76 | 11,9 |
| Graduate Surgeon | 294 | 46,1 |
| Fellow/Scholar | 1 | 0,2 |
| Resident | 25 | 3,9 |
| | | |
| ***Degree/Level of the Surgeon*** | | |
| Assistant | 158 | 24,8 |
| Head of Department | 47 | 7,4 |
| Senior Surgeon | 89 | 13,9 |
| Graduate Surgeon | 238 | 37,3 |
| Resident | 106 | 16,6 |

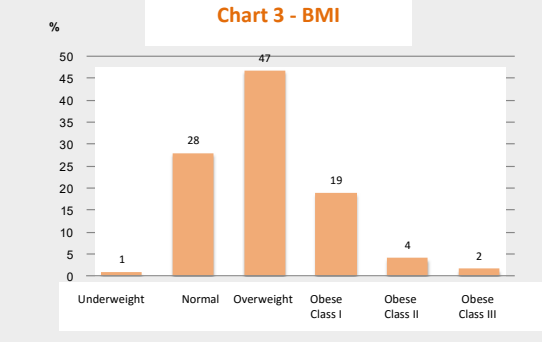
Hereinafter we show the distribution of hip revision surgeries according to gender, where it is evident the predominance of the feminine gender.




The distribution of revision hip arthroplasty surgery by age group is shown in Chart nr. 2, where one can see a predominance of the following age groups: 61-70 and 71-80.

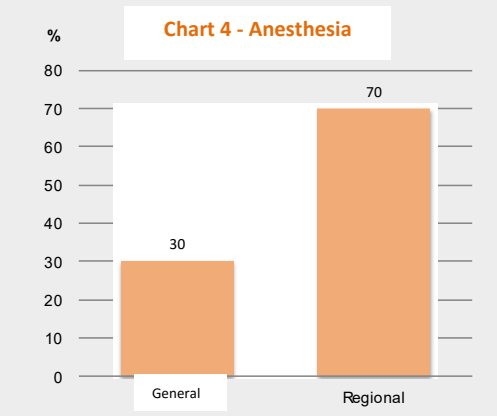



The Body Mass Index (BMI) of the patients who underwent revision hip arthroplasty is revealed in Chart nr. 3.



| Table 3 – Demographic Identification of the sample | | |
|---|---|---|
| | ***N*** | ***%*** |
| ***Gender*** | | |
| Feminine | 381 | 59,7 |
| Masculine | 257 | 40,3 |
| | | |
| ***Age*** | | |
| 21-30 | 2 | 0,3 |
| 31-40 | 8 | 1,3 |
| 41-50 | 21 | 3,3 |
| 51-60 | 70 | 11,0 |
| 61-70 | 176 | 27,6 |
| 71-80 | 258 | 40,4 |
| 81-90 | 100 | 15,7 |
| >90 | 3 | 0,5 |
| | | |
| ***BMI*** | | |
| Underweight | 5 | 0,8 |
| Normal | 178 | 27,9 |
| Overweight | 298 | 46,7 |
| Obese – Class I | 121 | 19,0 |
| Obese – Class II | 26 | 4,1 |
| Obese – Class III | 10 | 1,6 |

The type of anesthetics used in revision hip arthroplasty can be found on Chart nr. 4, where it is evident the predominance of regional anesthesia.



The ASA peri-operative risk of the patients who underwent revision hip arthroplasty can be found in Chart nr. 5.

Nevertheless, we note here, when we compare it to the primary arthroplasties with general anesthesia, that the value in revision surgery is 30% and only 15% in primary arthroplasties, which reflects the highest degree of complexity of the revision arthroplasties.

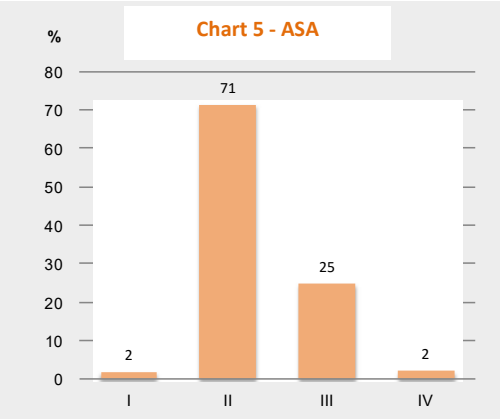



Chart nr. 6 shows the level of physical activity done by the patients who underwent surgery.

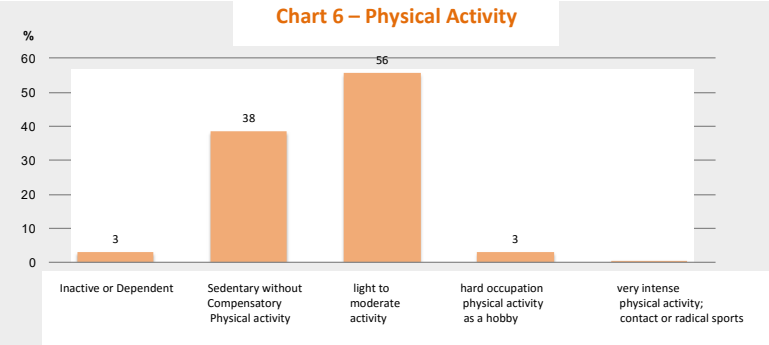
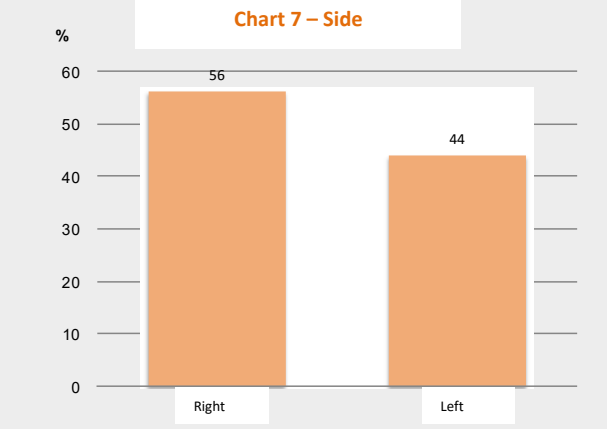
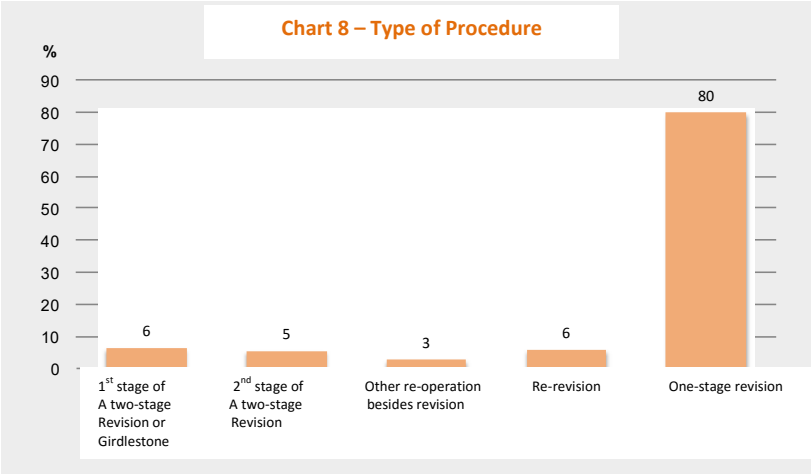



Chart nr. 7 reveals the side on which the arthroplasty was performed.




The one stage revision surgery was the type of procedure which was more widely used in the revision hip arthroplasties recorded (Chart nr. 8).




In what concerns the etiology of the revisions, the aseptic detachment of the stem and of the acetabulum, are the main causes for revision hip arthroplasty, followed by dislocation and infection (Chart nr. 9).

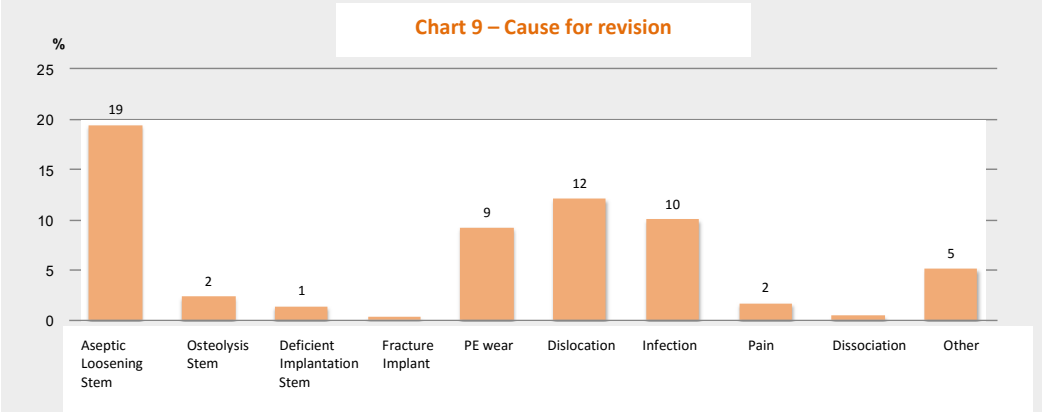
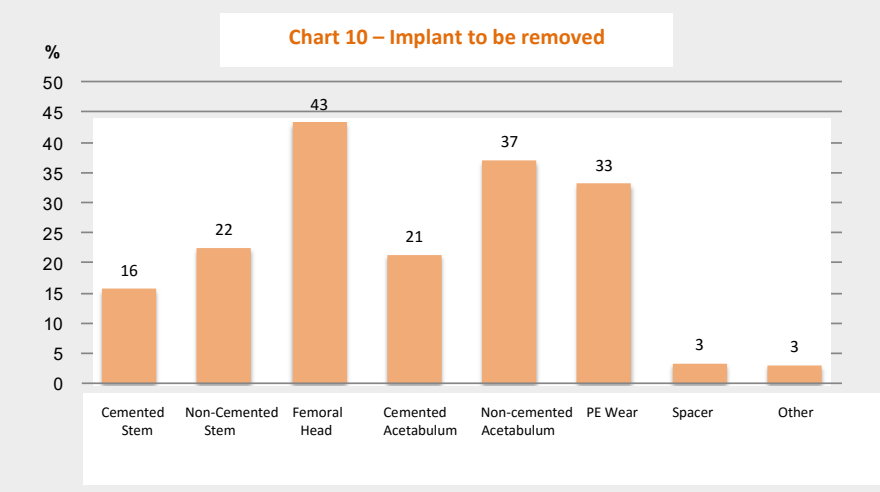



Chart nr. 10 shows the implants which were removed in the revision hip arthroplasties performed.




| Table 4 – Identification of the procedure | | |
|---|---|---|
| | ***N*** | **%** |
| ***Anesthesia*** | | |
| General | 192 | 30,1 |
| Regional | 445 | 69,9 |

| | | |
|---|---|---|
| ***ASA*** | | |
| I | 12 | 1,9 |
| II | 454 | 71,3 |
| III | 158 | 24,8 |
| IV | 13 | 2,0 |
| | | |
| ***Physical Activity*** | | |
| Inactive or dependent | 18 | 2,9 |
| Sedentary without any compensatory physical activity | 238 | 38,4 |
| Light to moderate physical activity | 344 | 55,6 |
| Hard occupation; physical activity as a hobby | 18 | 2,9 |
| Very intense physical activity; contact or radical sports | 1 | 0,2 |
| | | |
| ***Financial coverage*** | | |
| Private | 7 | 1,1 |
| Insurance | 2 | 0,3 |
| National Health System | 595 | 93,8 |
| Sub-system | 30 | 4,7 |
| | | |
| ***Comorbidities*** | | |
| HBP | 428 | 67,1 |
| Diabetes | 84 | 13,2 |
| RA | 18 | 2,8 |
| Dislipidemy | 195 | 30,6 |
| Cardiopathies | 81 | 12,7 |
| Pulmonary disease | 30 | 4,7 |
| Peripheral vascular disease | 32 | 5,0 |

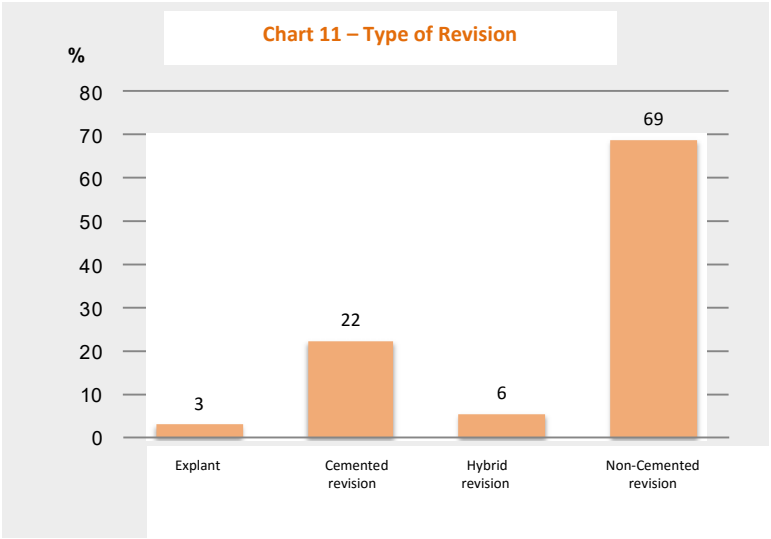
In what regards the Paying Entity, the National Health System is the main one, in this type of surgery.

The dominant pathology in the comorbidities is high blood pressure, followed by dislipedemy, diabetes and cardiopathies.

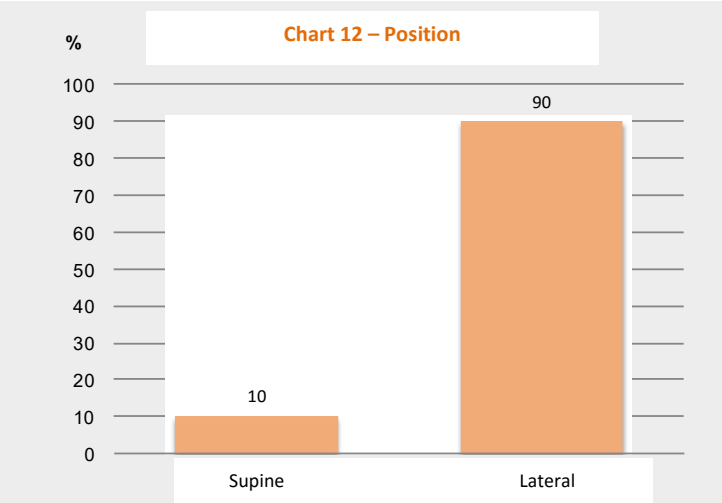
| Table 5 – Characterization of the disease | | |
|---|---|---|
| | ***N*** | ***%*** |
| ***Side*** | | |
| Right | 358 | 56,1 |
| Left | 280 | 43,9 |
| | | |
| ***Procedure*** | | |
| 1st stage of a two-stage revision or Girdlestone | 40 | 6,3 |
| 2nd time of a two-stage revision | 35 | 5,5 |
| Other re-operation besides revision | 17 | 2,7 |
| Re - Revision | 37 | 5,8 |
| One stage revision | 509 | 79,8 |
| | | |
| ***Cause for revision*** | | |
| Aseptic stem loosening | 124 | 19,4 |
| Osteolysis of the stem | 15 | 2,4 |
| Deficient implantation of the stem | 9 | 1,4 |
| Fracture of the implant - stem | 2 | 0,3 |
| PE wear | 59 | 9,2 |
| Luxation | 77 | 12,1 |
| Infection | 64 | 10,0 |
| Pain | 11 | 1,7 |
| Dissociation | 3 | 0,5 |
| Other | 33 | 5,2 |
| | | |
| | | |
| ***Implant to be removed*** | | |
| Cemented stem | 100 | 15,7 |
| Non-cemented stem | 143 | 22,4 |
| Femoral head | 276 | 43,3 |
| Cemented acetabulum | 136 | 21,3 |
| Non cemented acetabulum | 236 | 37,0 |
| PE | 211 | 33,1 |
| Spacer | 21 | 3,3 |

| | | |
|---|---|---|
| Other | 19 | 3,0 |
| | | |
| ***For re-operation*** | | |
| Exploring the wound | 1 | 0,2 |
| Reduction | 9 | 1,4 |
| Excision | 0 | 0,0 |
| Osteosynthesis | 3 | 0,5 |
| Graft | 0 | 0,0 |
| Mechanical conflict | 0 | 0,0 |
| Other | 3 | 0,5 |

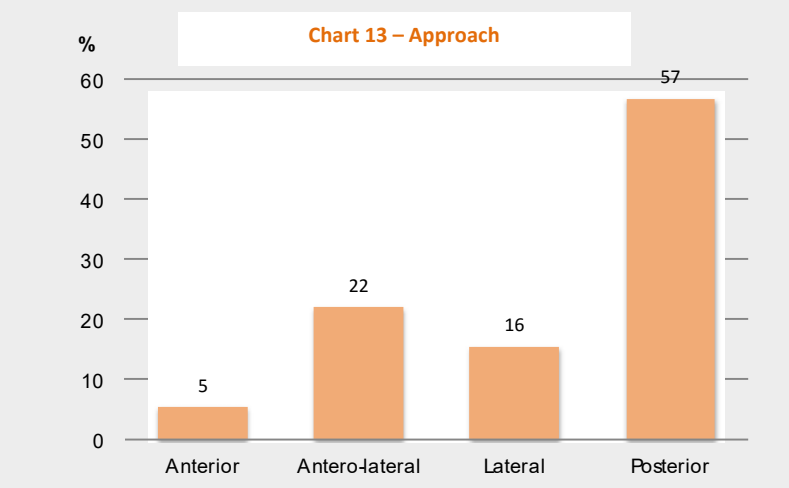
Chart nr. 11 allows us to verify that in most cases, the arthroplasties were non-cemented, in the revisions registered in 2013.



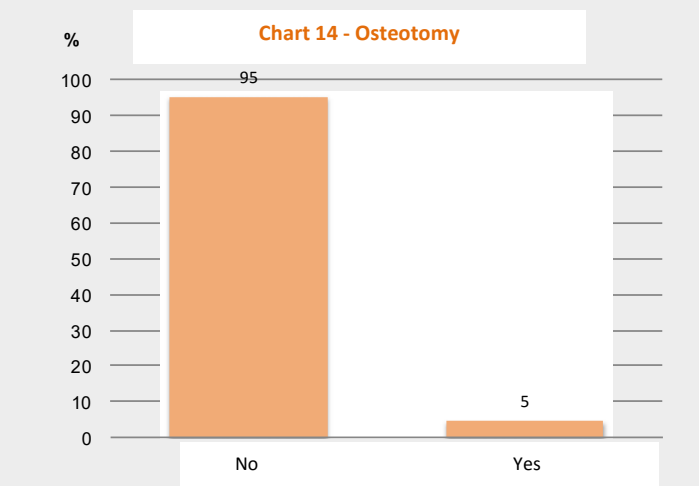

In what concerns the positioning of the patient during surgery, the lateral position is the preferred one (Chart nr. 12).




In terms of approach, in revision hip arthroplasties, it is apparent that the posterior approach was the most used (Chart nr. 13).




In 95% of the revision, no femoral osteotomy was done (Chart nr. 14).




By analyzing the arthroplasties recorded in the Portuguese Arthroplasty Register, one will realize that there is a predominance of non-cemented revision arthroplasties.

In the 27% of the cases, in which bone cement was used, in the majority of those (78%) the cement was used with antibiotics (Chart nr. 15).

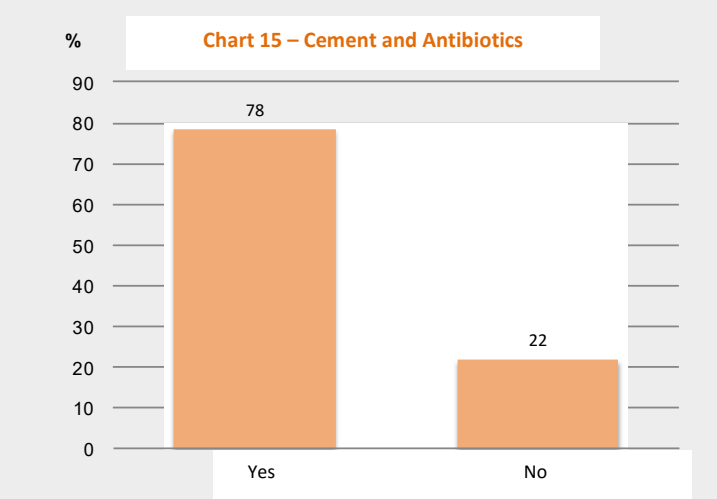



Table 6 - Surgery

| | *N* | % |
|---|---|---|
| ***Procedure*** | | |
| Explant | 19 | 3,1 |
| Cemented revision | 138 | 22,4 |

| | | |
|---|---|---|
| Hybrid revision | 34 | 5,5 |
| Non-cemented revision | 424 | 68,9 |
| | | |
| ***Position*** | | |
| Supine | 63 | 10,1 |
| Lateral | 562 | 89,9 |
| | | |
| ***Approach*** | | |
| Anterior | 35 | 5,5 |
| Antero-lateral | 141 | 22,1 |
| Lateral | 99 | 15,5 |
| Posterior | 363 | 56,9 |
| | | |
| ***Osteotomy*** | | |
| No | 608 | 95,3 |
| Yes | 30 | 4,7 |
| | | |
| ***Cement*** | | |
| No | 463 | 72,6 |
| Yes | 175 | 27,4 |
| If yes, with antibiotics? | | |
| Yes | 137 | *78,3* |
| No | 38 | *21,7* |
| | | |
| ***Graft*** | | |
| No | 515 | 81,2 |
| Yes | 119 | 18,8 |
| | | |
| ***Thromboprophylaxis*** | | |
| Chemical | 636 | 99,7 |
| enoxaparin (lovenox) | 597 | *93,9* |
| nadroparin (fraxiparin) | 4 | *0,6* |
| rivaroxaban (xarelto) | 35 | *5,5* |
| No prophylaxis | 2 | 0,3 |

| | | |
|---|---|---|
| ***Antibiotic prophylaxis*** | | |
| No | 10 | 1,6 |
| Yes | 628 | 98,4 |
| If yes, for how long? | | |
| 24H | 207 | *33,1* |
| 48H | 240 | *38,3* |
| >48H | 179 | *28,6* |
| | | |
| ***Antibiotics*** | | |
| Cefazoline | 299 | 47,1 |
| Cefuroxime | 75 | 11,8 |
| Vancomicine | 23 | 3,6 |
| Cefazoline + Gentamicine | 22 | 3,5 |
| Other | 216 | 34,0 |
| | | |
| ***Additional elements*** | | |
| Acetabular reeinforcement ring | 90 | 14,1 |
| Acetabular increases | 26 | 4,1 |
| Cables and nets | 95 | 14,9 |
| Plates | 18 | 2,8 |

Thromboprophylaxis is systematic, as can be seen, and enoxaparin is still the drug which is the most used (94 %) followed by rivaroxaban (5%).

The antibiotic prophylaxy is done in 98,4% of the revision hip arthroplasties, and the antibiotic which is more widely used is the cefazolin.

Below are the tables with the materials used in revision hip arthroplasties.

The next table lists the non-cemented stems which were used.

The table afterwards shows the cementless stems used.

| Non-Cemented stems | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| ZIMMER | | 44 |
| | Wagner SL monobloco | 31 |
| | Revitan | 7 |
| | CLS Spotorno | 2 |
| | Wagner Cónica | 1 |

| | | |
|---|---|---|
| | Versys | 1 |
| | Most (tumoral) | 1 |
| | ML-Taper Kinectiv | 1 |
| LIMA | | 41 |
| | Revision Hip | 39 |
| | Modulus | 1 |
| | H-Max | 1 |
| LINK | | 36 |
| | MP-Link | 36 |
| DePuy | | 36 |
| | S-Rom | 16 |
| | Reef | 8 |
| | Kar (Corail de revisão) | 8 |
| | Corail | 3 |
| | Silent | 1 |
| SMITH & NEPHEW | | 29 |
| | SMR Revision Hip | 19 |
| | Polar Stem | 10 |
| PETER-BRHEM | | 19 |
| | MRP-Titan | 19 |
| BIOMET | | 14 |
| | Hyperion modular | 7 |
| | Arcos modular | 3 |
| | Taperloc | 2 |
| | Conelock | 2 |
| STRYKER | | 3 |
| | Restoration mod. | 3 |
| EVOLUTIS | | 2 |
| | STEMSYS | 2 |
| SEM | | 1 |
| | Iramis | 1 |
| LAFITT | | 1 |
| | Selfitt | 1 |
| ***Total*** | | **226** |

The table below presents the cemented stems used.

| Cemented stems | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| ZIMMER | | 11 |
| | Muller | 9 |
| | Versys LD/FX | 2 |
| SMITH & NEPHEW | | 11 |
| | Muller | 6 |
| | Polar Stem | 5 |
| DePuy | | 10 |
| | Corail | 8 |
| | C-Stem | 2 |
| LINK | | 5 |
| | Classic-Plus | 5 |
| BIOMET | | 5 |
| | Art | 3 |
| | Taperloc | 1 |
| | PMB | 1 |
| STRYKER | | 1 |
| | ABG II | 1 |
| LIMA | | 1 |
| | CL (revisão) | 1 |
| LAFITT | | 1 |
| | Blocfitt | 1 |
| ***Total*** | | ***45*** |

The following table lists the non-cemented acetabula used.

| Non-cemented acetabula: | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |

| | | |
|---|---|---|
| LIMA | | 77 |
| | TT (Metal Trabecular) | 56 |
| | Delta | 21 |
| ZIMMER | | 62 |
| | TMT (Metal Trabecular) | 56 |
| | Trilogy | 3 |
| | Allofit | 3 |
| DePuy | | 43 |
| | Pinacle Spirofit (roscado) | 25 |
| | Pinnacle | 17 |
| | Duraloc | 1 |
| SMITH & NEPHEW | | 35 |
| | Ep-Fit Plus | 21 |
| | R3 | 14 |
| BIOMET | | 20 |
| | Regenerex Ringloc (Metal Trabecular) | 8 |
| | Avantage (dupla mob.) | 7 |
| | Spidercup | 4 |
| | Exceed | 1 |
| LAFITT | | 10 |
| | Fitback | 5 |
| | dupla mobilidade | 2 |
| | Cupfitt | 2 |
| | LGK | 1 |
| STRYKER | | 4 |
| | Trident PSL | 3 |
| | dupla mobilidade | 1 |
| PERMEDICA | | 3 |
| | JUMP | 3 |
| EVOLUTIS | | 2 |
| | CAPTIV | 2 |
| WRIGHT | | 1 |
| | Procotyl | 1 |
| ***Total*** | | **257** |

This next table has the cemented acetabula used.

| Cemented Acetabula: | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| ZIMMER | | 37 |
| | Muller | 37 |
| SMITH & NEPHEW | | 31 |
| | Muller | 21 |
| | Reflection | 10 |
| LINK | | 27 |
| | Muller | 2 |
| | Snap-fit | 25 |
| BIOMET | | 9 |
| | Apollo | 3 |
| | Muller low profile | 2 |
| | Freedom Constrictivo | 2 |
| | Avantage (dupla mob.) | 1 |
| | Arcom XL | 1 |
| DePuy | | 7 |
| | Tri-lock | 6 |
| | Poli ciment. (Ultima, Muller) | 1 |
| STRYKER | | 5 |
| | Contemporary | 5 |
| LAFITT | | 2 |
| | Muller | 2 |
| PERMEDICA | | 1 |
| | JUMP | 1 |
| MERETE | | 1 |
| | Muller | 1 |
| MBA | | 1 |
| | Furlong Cup | 1 |
| Groupe Lepine | | 1 |
| | Lefevre retentif | 1 |
| B BRAUN | | 1 |
| | Bicontact | 1 |
| ***Total*** | | **123** |

The following table reveals the liners or inserts used in the revision arthroplasties recorded in the Portuguese Arthroplasty Register.

| Liner or Insert (Acetabular lining): | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| ZIMMER | | 69 |
| | Poli Longevity Crosslink | 43 |
| | Poli Trilogy | 16 |
| | Poli Cedior Alpha Crosslink | 5 |
| | Dupla-Mobilidade | 1 |
| | Cerâmica | 2 |
| | Poli Continuum TT | 1 |
| | Poli Cedior Kappa | 1 |
| LIMA | | 59 |
| | Poli X-Lima | 58 |
| | Dupla-Mobilidade | 1 |
| DePuy | | 57 |
| | Poli Marathon | 45 |
| | Poli Constrictivo | 10 |
| | Poli Marathon Batan | 2 |
| SMITH & NEPHEW | | 51 |
| | Ep Fit Plus Poli XLPE | 27 |
| | R3 XLPE | 15 |
| | Reflection Rex-Poli XLPE | 8 |
| | Cerâmica | 1 |
| BIOMET | | 45 |
| | Ringlock Arcom | 16 |
| | IQL 3V | 16 |
| | Ringlock Spidercup | 3 |
| | Ringlock Metal | 3 |
| | Ringlock Constrained | 2 |
| | Freedom Constrictivo | 2 |
| | Ringlock Cerâmica | 1 |
| | Avantage | 1 |

| | | |
|---|---|---|
| | Alize | 1 |
| LAFITT | | 10 |
| | Poli Cupfit | 7 |
| | Dupla-Mobilidade | 1 |
| | Poli Crosslink LGK | 2 |
| STRYKER | | 5 |
| | Trident X3 | 3 |
| | Trident Crossfire | 2 |
| FH Orthopedics | | 2 |
| | Poli | 1 |
| | Poli Restrictivo | 1 |
| LINK | | 1 |
| | Top | 1 |
| Groupe Lepine | | 1 |
| | Poli | 1 |
| ***Total*** | | **300** |

The table below shows the femoral heads used.

| Femoral Heads | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| ZIMMER | | 108 |
| | CrCo (Durasul/Versys) | 54 |
| | Inox (Protasul) | 43 |
| | Cerâmica | 4 |
| | Metal (Metasul) | 7 |
| SMITH & NEPHEW | | 108 |
| | CrCo | 67 |
| | Cerâmica | 21 |
| | Inox | 11 |
| | Oxinium | 8 |
| | Sist. Uni ou Bipolar/biarticular | 1 |
| DePuy | | 86 |

| | | |
|---|---|---|
| | Articul-EZE Metal | 37 |
| | Articul-EZE | 33 |
| | Cerâmica Delta | 15 |
| | ASR (Gr. Diam.) | 1 |
| LIMA | | 61 |
| | CrCo | 59 |
| | Cerâmica | 2 |
| BIOMET | | 48 |
| | CrCo | 35 |
| | Cerâmica | 6 |
| | Freedom | 5 |
| | Cab. Bipolar | 2 |
| LINK | | 30 |
| | CrCo | 30 |
| LAFITT | | 13 |
| | Sist. Lafitt CrCo | 12 |
| | Cab. Bipolar | 1 |
| STRYKER | | 9 |
| | LFIT V40 | 7 |
| | Colos Modulares | 2 |
| PETER-BRHEM | | 8 |
| | MRP | 8 |
| WRIGHT | | 6 |
| | CrCo Wright Lineage | 6 |
| MBA | | 6 |
| | CrCo | 5 |
| | Cupball | 1 |
| FH Orthopedics | | 2 |
| | CrCo | 1 |
| | Inox | 1 |
| ***Total*** | | **485** |

## Knee - Primary

In the period of January 1st until December 31st 2013 were recorded 4234 primary knee arthroplasties, in the Portuguese Arthroplasty Register.

Table 1 – List of the Hospitals where the arthroplasties were performed:

| | *N* | % |
|---|---|---|
| Hospital da Prelada, Porto | 420 | 9,9 |
| Centro Hospitalar Baixo Vouga (Aveiro, Estarreja e Águeda) | 324 | 7,7 |
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 313 | 7,4 |
| Centro Hospitalar Leiria-Pombal | 293 | 6,9 |
| Hospital Ortopédico de Sant'Ana, Parede | 244 | 5,8 |
| Centro Hospitalar Tondela-Viseu | 231 | 5,5 |
| Centro Hospitalar de Trás-os-Montes e Alto Douro ( Vila Real, Chaves e Lamego) | 220 | 5,2 |
| Unidade Local de Saúde do Nordeste (Macedo de Cavaleiros e Bragança) | 200 | 4,7 |
| Hospital Curry Cabral, Lisboa | 195 | 4,6 |
| Centro Hospitalar do Médio Tejo (Tomar, Abrantes e Torres Novas)) | 127 | 3,0 |
| Centro Hospitalar da Póvoa do Varzim - Vila do Conde | 117 | 2,8 |
| Hospital Escala Braga (ex- H. de S. Marcos) | 109 | 2,6 |
| Centro Hospitalar do Tâmega e Sousa ( Penafiel e Amarante) | 106 | 2,5 |
| Centro Hospitalar de Setúbal, Hospital Ortopédico Sant'Iago do Outão | 96 | 2,3 |
| Hospital do Litoral Alentejano, Santiago do Cacém | 96 | 2,3 |
| Hospital da Cruz Vermelha Portuguesa, Lisboa | 86 | 2,0 |
| Centro Hospitalar São João (HSJ e Valongo) | 82 | 1,9 |
| Hospital Garcia de Orta, Almada | 71 | 1,7 |
| Misericórdia de Riba d'Ave - Hospital Narciso Ferreira , Famalicão | 67 | 1,6 |
| Hospital de Faro | 60 | 1,4 |
| Centro Hospitalar Lisboa Norte, Hospital de Santa Maria | 57 | 1,3 |
| Hospital Nossa Senhora do Rosário, Barreiro | 57 | 1,3 |
| Hospital de S. João de Deus, Montemor-o-Novo | 56 | 1,3 |
| Hospital Distrital de Torres Vedras | 41 | 1,0 |
| Unidade Local de Saúde da Guarda - Hospital de Sousa Martins | 37 | 0,9 |
| Hospital Vila Franca de Xira | 36 | 0,9 |
| HOSPOR - Hospital de Santiago (Espírito Santo Saúde), Setúbal | 34 | 0,8 |
| Unidade Local de Saúde do Baixo Alentejo - Beja | 34 | 0,8 |

| | | |
|---|---|---|
| Misericórdia de Marco de Canavezes - Hospital Santa Isabel | 32 | 0,8 |
| Hospital Militar Regional I, Porto | 30 | 0,7 |
| Hospital Particular do Algarve - Unidade de Gambelas, Faro | 30 | 0,7 |
| Unidade Local de Saúde do Norte Alentejano - Portalegre e Elvas | 26 | 0,6 |
| Centro Hospitalar de Lisboa Ocidental, Hospital de S. Francisco Xavier | 25 | 0,6 |
| Centro Hospitalar Universitário de Coimbra (HUC e Covões) | 23 | 0,5 |
| Hospital da Ven. O. Terc. de S. Francisco, Porto | 22 | 0,5 |
| Hospital da Misericórdia da Mealhada | 22 | 0,5 |
| Hospital de Ponta Delgada, Açores | 20 | 0,5 |
| Hospital Distrital de Ovar (Hospital Dr. Francisco Zagalo) | 19 | 0,4 |
| Hospital da Misericórdia de Lousada | 17 | 0,4 |
| Hospital Distrital da Figueira da Foz | 16 | 0,4 |
| Centro Hospitalar de Vila Nova de Gaia e Espinho | 15 | 0,4 |
| Clínica de Santo António - Clisa, Reboleira, Amadora | 15 | 0,4 |
| British Hospital Lisboa XXI | 14 | 0,3 |
| Intercir – Centro Cirúrgico de Coimbra, SA | 12 | 0,3 |
| Centro Hospitalar do Médio Ave (Santo Tirso e Famalicão) | 11 | 0,3 |
| Hospital da Luz, Lisboa | 11 | 0,3 |
| Hospital da Arrábida (Espírito Santo Saúde), Vila Nova de Gaia | 10 | 0,2 |
| Hospital Distrital de Santarém | 10 | 0,2 |
| Hospital Amadora-Sintra (Prof. Dr. Fernando Fonseca) | 8 | 0,2 |
| Centro Hospitalar de Lisboa Central, Hospital de S. José | 7 | 0,2 |
| HPP Norte - H. Privado dos Clérigos e H. Privado da Boavista, Porto | 7 | 0,2 |
| Misericórdia do Entroncamento - Hospital S. João Baptista | 6 | 0,1 |
| Clínica de S. João de Deus, Lisboa | 3 | 0,1 |
| Hospital Distrital da Horta, Açores | 3 | 0,1 |
| Clínica do Bom Jesus, Ponta Delgada, S. Miguel, Açores | 2 | 0,0 |
| CLIRIA - Hospital Privado de Aveiro | 2 | 0,0 |
| Hospital CUF Descobertas, Lisboa | 2 | 0,0 |
| Hospital de Santo Espírito de Angra do Heroísmo, Açores | 2 | 0,0 |
| Unidade Local de Saúde de Castelo Branco - Hospital Amato Lusitano | 2 | 0,0 |
| Centro Hospitalar do Porto - Hospital Geral de Santo António | 1 | 0,0 |
| ***Total*** | **4234** | **100,0** |

Table 2 shows the composition of the surgical team in the knee arthroplasties recorded.

| Table 2 – Surgical team | | |
|---|---|---|
| | ***N*** | **%** |
| ***Degree of the Surgeon*** | | |
| Assistant | 845 | 20,0 |
| Head of Department | 716 | 16,9 |
| Junior Surgeon | 2 | 0,0 |
| Senior Surgeon | 569 | 13,4 |
| Graduate Surgeon | 1723 | 40,7 |
| Fellow/Scholar | 3 | 0,1 |
| Resident | 376 | 8,9 |
| | | |
| ***Degree of the first help*** | | |
| Assistant | 964 | 22,8 |
| Head of Department | 486 | 11,5 |
| Junior Surgeon | 14 | 0,3 |
| Senior Surgeon | 590 | 13,9 |
| Graduate Surgeon | 1529 | 36,1 |
| Fellow/Scholar | 12 | 0,3 |
| Resident | 638 | 15,1 |

In the distribution according to gender (Chart nr. 1), there is a predominance of females.

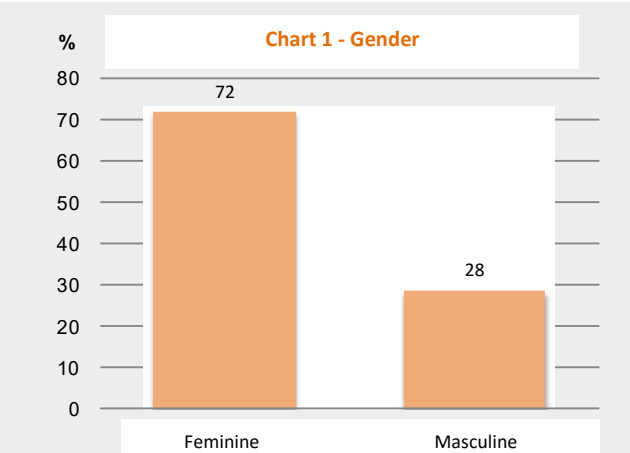
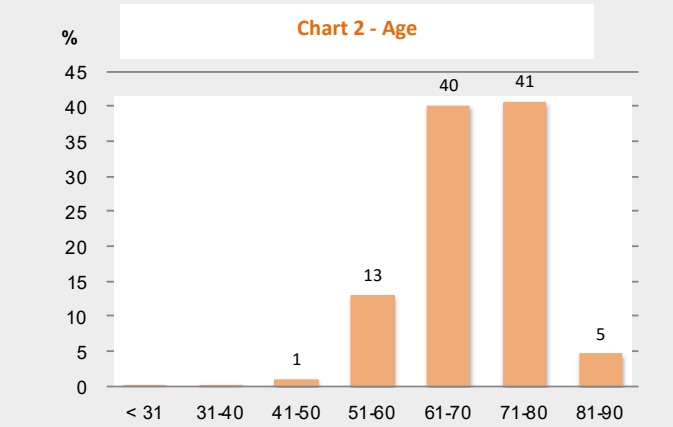



Chart nr. 2 represents the distribution by age groups, and the two main groups are: 61-70 and 71-80 years.




The Body Mass Index (Chart nr. 3) of the patients submitted to hip arthroplasty, ranges from overweight to Obese Class I.

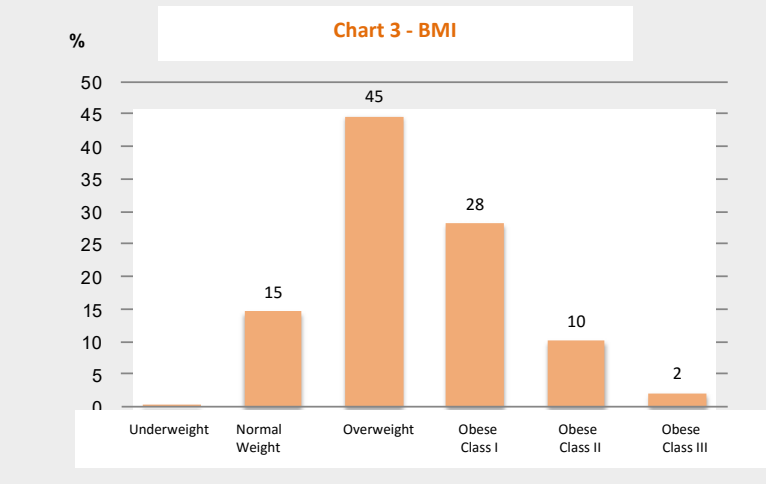
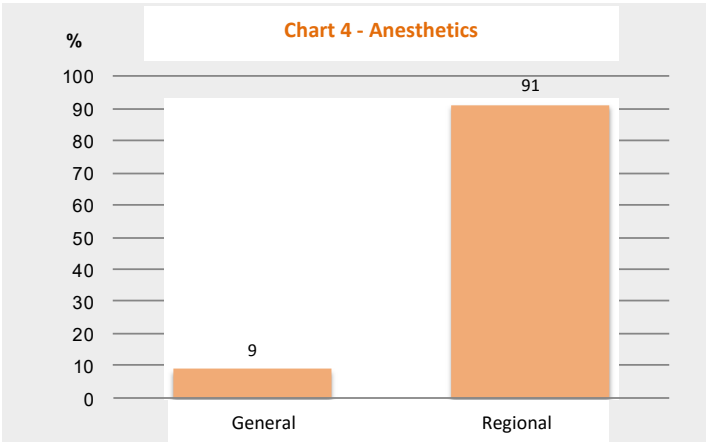



Table 3 – Identification of the demographic sample

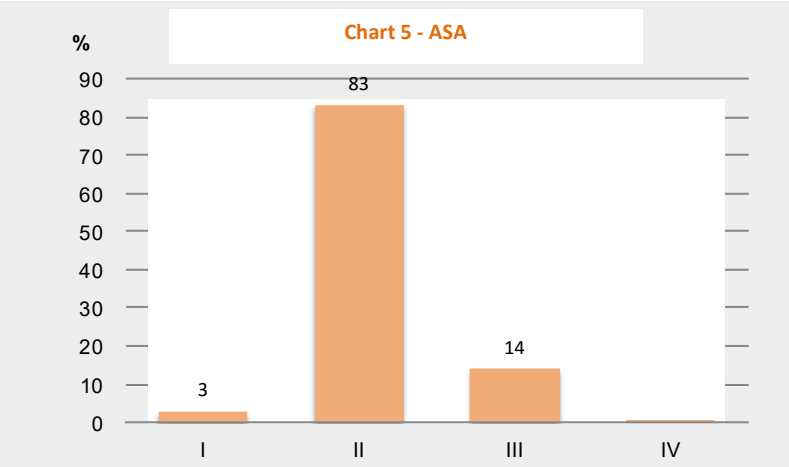
| | *N* | % |
|---|---|---|
| ***Gender*** | | |
| Feminine | 3032 | 71,6 |
| Masculine | 1202 | 28,4 |

| | | |
|---|---|---|
| ***Age*** | | |
| < 31 | 2 | 0,0 |
| 31-40 | 15 | 0,4 |
| 41-50 | 44 | 1,0 |
| 51-60 | 551 | 13,0 |
| 61-70 | 1700 | 40,2 |
| 71-80 | 1721 | 40,7 |
| 81-90 | 198 | 4,7 |
| | | |
| ***BMI*** | | |
| Underweight | 7 | 0,2 |
| Normal weight | 614 | 14,6 |
| Overweight | 1872 | 44,7 |
| Obese – Class I | 1181 | 28,2 |
| Obese – Class II | 428 | 10,2 |
| Obese – Class III | 90 | 2,1 |

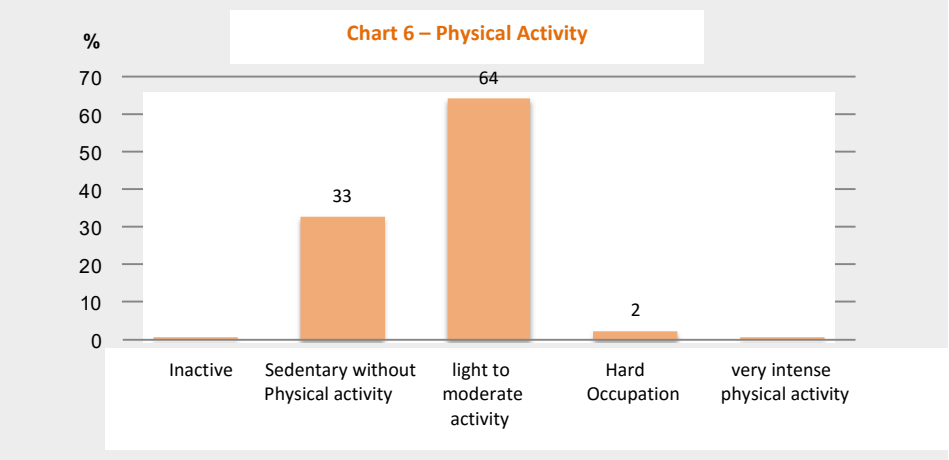
The type of anesthesia which was used the most in this type of arthroplasty, was the regional or local anesthesia (Chart nr. 4).




The ASA peri-operative risk assessment of the patients who underwent knee arthroplasty, was predominantly II and III (Chart nr. 5).




The patients who underwent surgery were sedentary, or practiced light to moderate activity (Chart nr. 6).

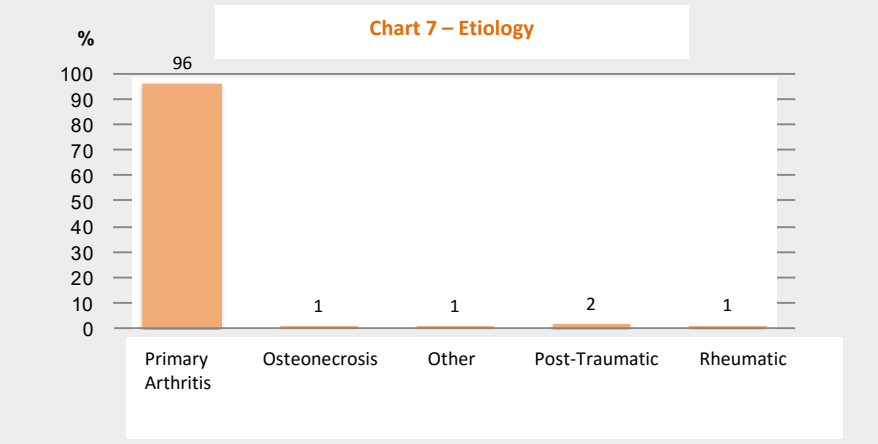



| Table 4 – Identification of the procedure | | |
|---|---|---|
| | ***N*** | **%** |
| ***Anesthesia*** | | |
| General | 375 | 8,9 |
| Regional | 3854 | 91,1 |
| | | |
| ***ASA*** | | |

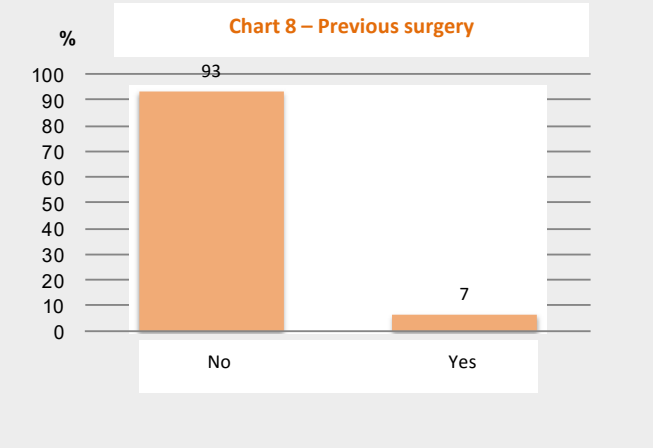
| | | |
|---|---|---|
| I | 117 | 2,8 |
| II | 3520 | 83,2 |
| III | 587 | 13,9 |
| IV | 9 | 0,2 |
| | | |
| ***Physical activity*** | | |
| Inactive or dependent | 19 | 0,5 |
| Sedentary without any compensatory physical activity | 1387 | 32,9 |
| Light to moderate physical activity | 2710 | 64,2 |
| Hard occupation; physical activity as a hobby | 103 | 2,4 |
| Very intense physical activity; contact or radical sports | 2 | 0,0 |
| | | |
| ***Paying Entity*** | | |
| Private | 63 | 1,5 |
| Insurance | 26 | 0,6 |
| National Health System | 3899 | 92,2 |
| Sub-system | 243 | 5,7 |

Regarding the Paying Entity, the National Health System is still the main one, in this type of procedure.

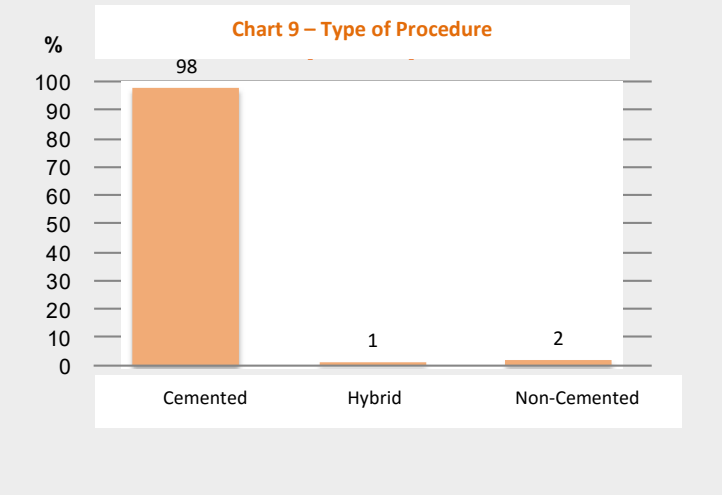
In the etiology, one observes the preponderance of the primary arthritis (96%).




About 7% of the patients had had previous surgery in the knee which was submitted to knee arthroplasty (Chart nr. 8).




The dominant type of procedure continues to be the cemented total knee arthroplasty (Chart nr. 9).



| Table 5 – Characterization of the disease | | |
|---|---|---|
| | ***N*** | **%** |
| ***Side*** | | |
| Bilateral | 947 | 22,4 |
| Unilateral | 3283 | 77,6 |
| | | |
| ***Side*** | | |
| Right | 2181 | 51,6 |
| Left | 2044 | 48,4 |
| | | |
| ***Etiology*** | | |
| Primary Arthritis | 4068 | 96,1 |
| Osteonecrosis | 23 | 0,5 |
| Other | 26 | 0,6 |
| Post-Traumatic | 70 | 1,7 |
| Rheumatic | 44 | 1,0 |
| | | |
| ***Previous Surgery*** | | |
| No | 3949 | 93,3 |
| Yes | 282 | 6,7 |
| | | |
| ***Type of Arthroplasty*** | | |
| Condylar | 55 | 1,3 |
| Total Arthroplasty | 4176 | 98,7 |
| | | |
| ***Type of Procedure*** | | |
| Cemented | 4125 | 97,6 |
| Hybrid | 36 | 0,9 |
| Non Cemented | 67 | 1,6 |
| | | |
| ***Degree of Difficulty*** | | |
| Complex Primary | 133 | 3,1 |
| Simple Primary | 4098 | 96,9 |
| | | |
| | | |

| ***Comorbidites*** | | |
|---|---|---|
| HBP | 3115 | 73,6 |
| Diabetes | 708 | 16,7 |
| RA | 67 | 1,6 |
| Dislipidemy | 1521 | 35,9 |
| Cardiopathies | 314 | 7,4 |
| Pulmonary Disease | 139 | 3,3 |
| Peripheral vascular disease | 286 | 6,8 |
| Other | 802 | 18,9 |

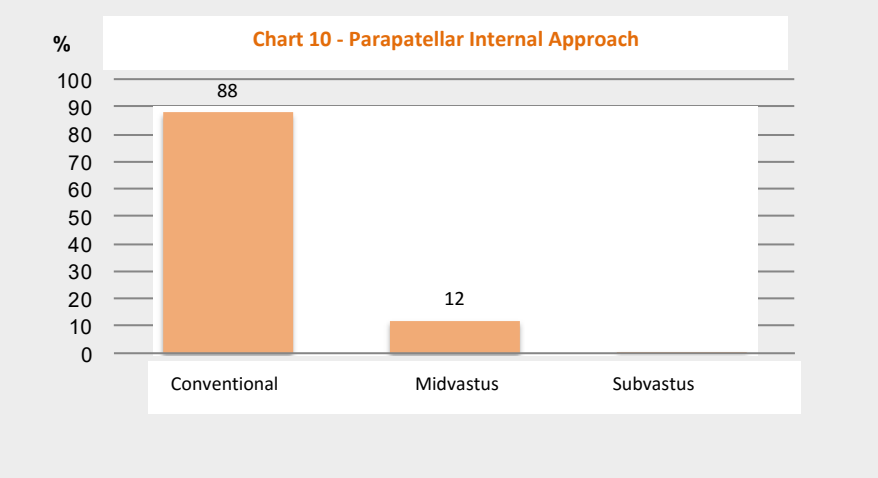
The overwhelming majority of the patients who underwent total knee arthroplasties (around 99%), in what concerns the primary arthroplasties, to the detriment of unicompartmental arthroplasties.

The dominant type of procedure continues to be the cemented type.

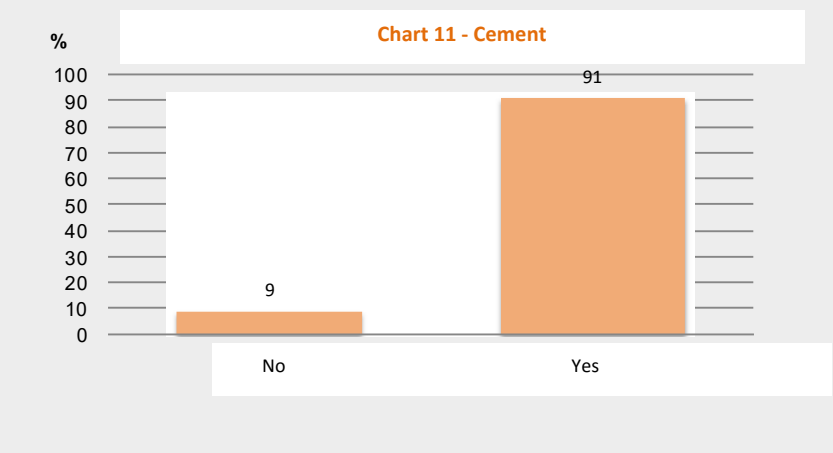
The main pathology as far as comorbidites, is high blood pressure, followed by dislipidemy, diabetes and cardiopathies.

The surgical approach was, massively, the parapatellar internal approach, representing 99,8% of the surgeries recorded.

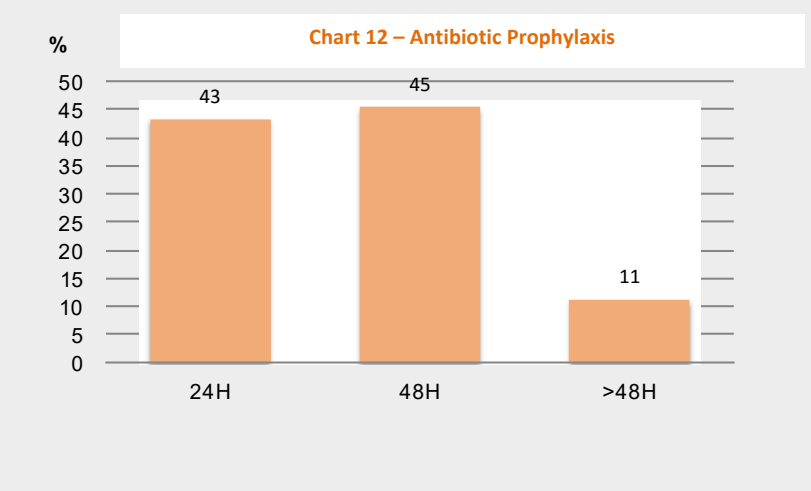
Within the internal parapatellar approach, in 87,9% of them, the conventional approach was the norm (Chart nr. 10)



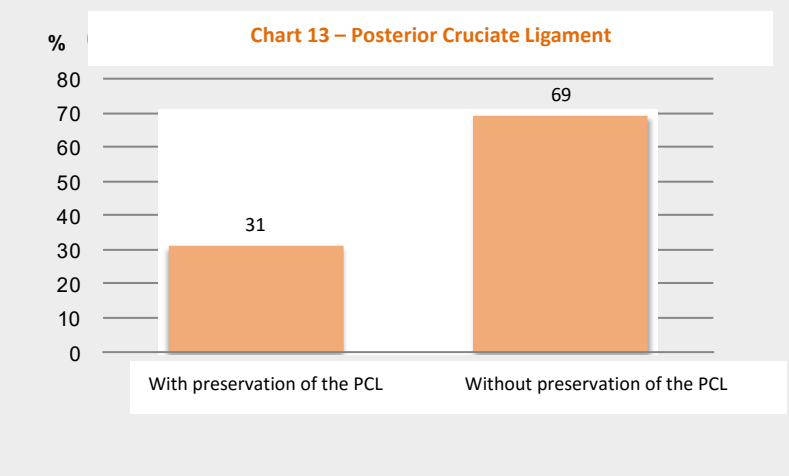

In the vast majority of the knee arthroplasties, the surgeon opted for cementation (Chart nr. 11).




The antibiotic prophylaxis is done in 99,7% of the knee arthroplasties, and that therapy is done for a period of up to 48 hours (Chart nr. 12).




In 69% of the knee arthroplasties, the substitution of the posterior cruciate ligament was performed (Chart nr. 13).




In 4% of the cases, mobile bearing platforms were used, and the preference is clearly for the fixed plate (96% of the cases) (Chart nr. 14).

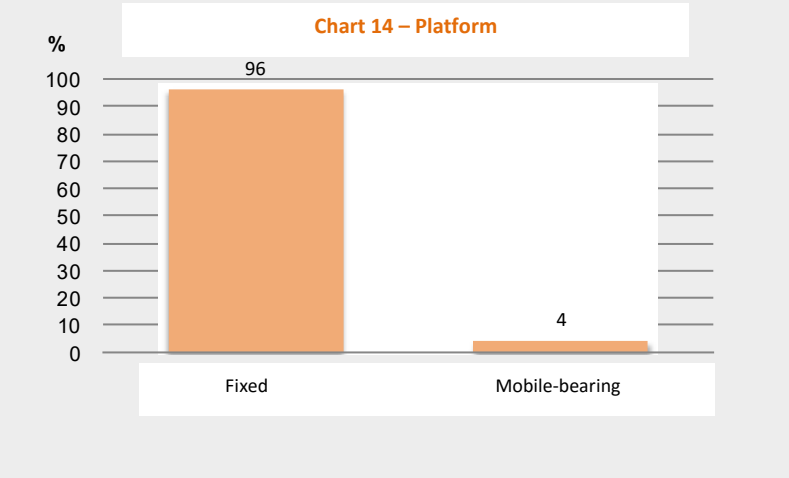
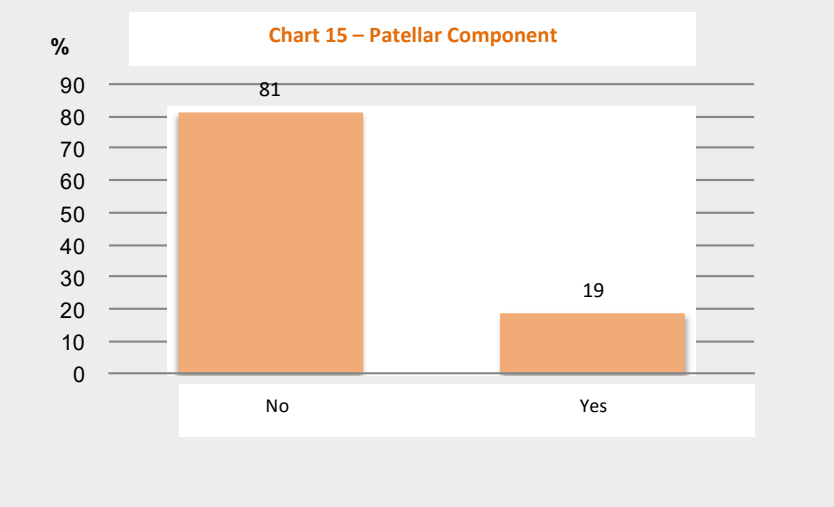



Chart nr. 15 reflects the use of the patellar component. In 18,8% of the knee arthroplasties, a patellar component was used.




The size of the incision is, in the majority of the cases, between 11 and 18 centimeters (Chart nr. 13).

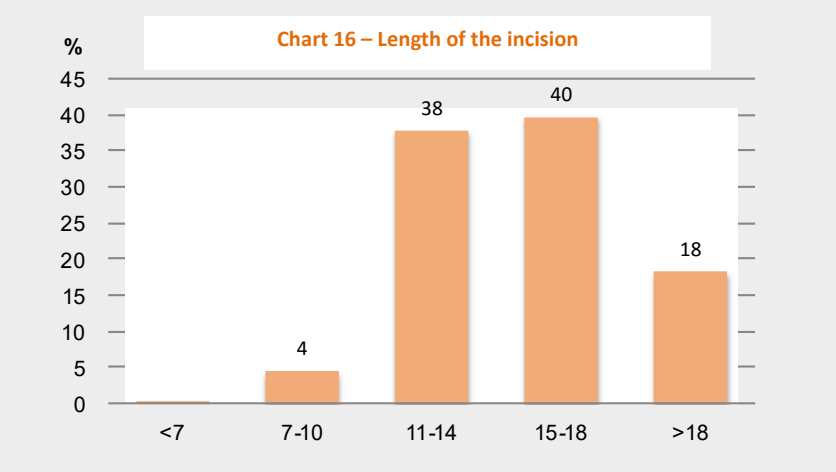



Table 6 - Surgery

| | N | % |
|---|---|---|
| ***Approach*** | | |
| External parapatellar approach | 7 | 0,2 |
| Internal parapatellar approach | 4224 | 99,8 |
| Conventional | 3710 | *87,9* |
| Midvastus | 502 | *11,9* |
| Subvastus | 9 | *0,2* |
| | | |
| ***Length of the incision*** | | |
| <7 | 1 | 0,0 |
| 7-10 | 177 | 4,4 |
| 11-14 | 1518 | 37,7 |
| 15-18 | 1598 | 39,7 |
| >18 | 734 | 18,2 |
| | | |
| ***Cement*** | | |
| No | 382 | 9,0 |
| Yes | 3849 | 91,0 |
| If yes, with antibiotics? | | |
| Yes | 2291 | *59,5* |
| No | 1557 | *40,5* |

| | | |
|---|---|---|
| ***Graft*** | | |
| No | 4207 | 99,5 |
| Yes | 23 | 0,5 |
| Tibial graft | 12 | *52,2* |
| Femoral graft | 13 | *56,5* |
| | | |
| ***Thromboprophylaxis*** | | |
| Mechanical | 1 | 0,0 |
| Chemical | 4226 | 99,9 |
| dabigatran (pradaxa) | 19 | *0,4* |
| eliquis (apixaban) | 2 | *0,0* |
| enoxaparin (lovenox) | 3881 | *91,8* |
| nadroparin (fraxiparina) | 48 | *1,1* |
| rivaroxaban (xarelto) | 272 | *6,4* |
| Other | 4 | *0,1* |
| No prophylaxy | 3 | 0,1 |
| | | |
| ***Antibiotic prophylaxy*** | | |
| No | 2 | 0,0 |
| Yes | 4227 | 100,0 |
| If yes, for how long? | | |
| 24H | 1832 | *43,4* |
| 48H | 1917 | *45,4* |
| >48H | 477 | *11,3* |
| | | |
| ***Antibiotics*** | | |
| Cefazoline | 2497 | 59,4 |
| Cefuroxime | 486 | 11,6 |
| Cefoxitine | 43 | 1,0 |
| Other | 1181 | 28,1 |
| | | |
| ***Patellar Component*** | | |
| No | 3435 | 81,2 |
| Yes | 795 | 18,8 |

| | | |
|---|---|---|
| Encastrable | 626 | *78,8* |
| Resurfacing | 168 | *21,2* |
| | | |
| ***Platform*** | | |
| Fixed | 4062 | 96,0 |
| Mobile bearing | 168 | 4,0 |

In most of the knee arthroplasties recorded, they were cemented, and in 59.5% of the cases of cemented arthroplasty, the cement was used antibiotics.

As can be seen, the Thromboprophylaxis is systematic (99.9%), enoxaparin continuing to be the most widely used drug (used in more than 91.8%), followed by rivaroxaban in about 6.4% of the cases.

Antibiotic prophylaxis is carried out in 99.7% of the knee arthroplasties, mainly for a period of up to 48 hours, and the most commonly used antibiotic was cefazolin.

Here is the list of the implants used in knee arthroplasties registered from 1 January to 31 December 2013.

The following table shows the femoral components used.

| Femoral Component | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 1269 |
| | TC-Plus | 660 |
| | Profix | 427 |
| | Legion | 169 |
| | Acuris (uni) | 7 |
| | Journey-BCS | 3 |
| | Journey PFJ (patelo-femoral) | 2 |
| | RT Modular-Plus (hinge) | 1 |
| BIOMET | | 853 |
| | Sist. Vanguard | 820 |

| | | |
|---|---|---|
| | Oxford (uni) | 30 |
| | Vanguard SSK (revisão) | 2 |
| | Sist. Perfomance | 1 |
| DePuy | | 647 |
| | Sist. PFC Sigma | 622 |
| | TC3 Sigma | 23 |
| | S-Rom Noiles (hinge) | 2 |
| WRIGHT | | 423 |
| | Advance | 423 |
| ZIMMER | | 388 |
| | NexGen | 356 |
| | Natural Knee | 22 |
| | ZUC (uni) | 8 |
| | LCCK (Legacy Constrained) | 2 |
| STRYKER | | 294 |
| | Sist. Triathlon | 294 |
| LAFITT | | 163 |
| | Anakine | 156 |
| | Classic | 7 |
| LIMA | | 143 |
| | Multigen Plus | 143 |
| MBA | | 93 |
| | Kneetec | 58 |
| | HLS Noetos | 28 |
| | Apex | 5 |
| | Evolution (uni) | 2 |
| B BRAUN | | 16 |
| | Columbus | 16 |
| LINK | | 6 |
| | Endo-Model (hinge) | 6 |
| TRAIBER | | 1 |
| | Excel | 1 |
| ***Total*** | | **4296** |

The table below lists the patellar components used.

| Patellar component | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| DePuy | | 336 |
| | Sist. PFC Sigma | 323 |
| | TC3 Sigma | 10 |
| | S-Rom Noiles (hinge) | 3 |
| BIOMET | | 136 |
| | Sist. Vanguard | 136 |
| STRYKER | | 85 |
| | Sist. Triathlon | 85 |
| SMITH & NEPHEW | | 45 |
| | TC-Plus | 24 |
| | Legion | 13 |
| | Profix | 5 |
| | Journey PFJ (patelo-femoral) | 2 |
| | Journey-BCS | 1 |
| MBA | | 35 |
| | HLS Noetos | 21 |
| | Kneetec | 12 |
| | Optetrack | 1 |
| | Apex | 1 |
| WRIGHT | | 22 |
| | Advance | 22 |
| ZIMMER | | 18 |
| | NexGen | 18 |
| LIMA | | 5 |
| | Multigen Plus | 5 |
| B BRAUN | | 2 |
| | Columbus | 2 |
| TRAIBER | | 1 |
| | Excel | 1 |
| LAFITT | | 1 |
| | Anakine | 1 |
| ***Total*** | | **686** |

The following table lists the tibial components recorded.

| Tibial Component | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 1177 |
| | TC-Plus | 617 |
| | Profix | 388 |
| | Legion | 164 |
| | Acuris (uni) | 5 |
| | Journey-BCS | 2 |
| | RT Modular-Plus (hinge) | 1 |
| BIOMET | | 784 |
| | Sist. Vanguard | 754 |
| | Oxford (uni) | 24 |
| | Sist. Perfomance | 4 |
| | Vanguard SSK (revisão) | 2 |
| DePuy | | 634 |
| | Sist. PFC Sigma | 606 |
| | TC3 Sigma | 24 |
| | S-Rom Noiles (hinge) | 4 |
| WRIGHT | | 379 |
| | Advance | 379 |
| ZIMMER | | 331 |
| | NexGen | 306 |
| | Natural Knee | 19 |
| | ZUC (uni) | 6 |
| STRYKER | | 245 |
| | Sist. Triathlon | 245 |
| LAFITT | | 158 |
| | Anakine | 151 |
| | Classic | 7 |
| LIMA | | 137 |
| | Multigen Plus | 137 |
| MBA | | 77 |
| | Kneetec | 52 |
| | HLS Noetos | 21 |

| | | |
|---|---|---|
| | Evolution (uni) | 2 |
| | Optetrack | 1 |
| | Apex | 1 |
| B BRAUN | | 12 |
| | Columbus | 12 |
| LINK | | 5 |
| | Endo-Model (hinge) | 5 |
| TRAIBER | | 1 |
| | Excel | 1 |
| ***Total*** | | **3940** |

The table below has a list of the femoral and tibial stems which were used, in the primary arthroplasties of the knee.

| Femoral and Tibial Stems | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 494 |
| | Profix | 389 |
| | TC-Plus | 104 |
| | Legion | 1 |
| STRYKER | | 35 |
| | Sist. Triathlon | 35 |
| DePuy | | 34 |
| | Sist. PFC Sigma | 29 |
| | TC3 Sigma | 5 |
| BIOMET | | 16 |
| | Sist. Vanguard | 15 |
| | Vanguard SSK (revisão) | 1 |
| WRIGHT | | 12 |
| | Advance | 12 |
| MBA | | 7 |
| | Kneetec | 4 |
| | Apex | 3 |
| LAFITT | | 5 |
| | Anakine | 5 |

| | | |
|---|---|---|
| ZIMMER | | 4 |
| | NexGen | 4 |
| LIMA | | 4 |
| | Multigen Plus | 4 |
| B BRAUN | | 2 |
| | Columbus | 2 |
| ***Total*** | | **613** |

The table below lists the polyethylene used.

| Polyethylene | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 1117 |
| | TC-Plus | 564 |
| | Profix | 378 |
| | Legion | 166 |
| | Acuris (uni) | 5 |
| | RT Modular-Plus (hinge) | 2 |
| | Journey-BCS | 2 |
| BIOMET | | 730 |
| | Sist. Vanguard | 699 |
| | Oxford (uni) | 25 |
| | Sist. Perfomance | 3 |
| | Vanguard SSK (revisão) | 2 |
| | Alpina | 1 |
| DePuy | | 386 |
| | Sist. PFC Sigma | 359 |
| | TC3 Sigma | 24 |
| | S-Rom Noiles (hinge) | 3 |
| WRIGHT | | 351 |
| | Advance | 351 |
| ZIMMER | | 329 |

| | | |
|---|---|---|
| | NexGen | 300 |
| | Natural Knee | 21 |
| | ZUC (uni) | 6 |
| | LCCK (Legacy Constrained) | 2 |
| STRYKER | | 229 |
| | Sist. Triathlon | 229 |
| LAFITT | | 140 |
| | Anakine | 133 |
| | Classic | 7 |
| LIMA | | 132 |
| | Multigen Plus | 132 |
| MBA | | 70 |
| | Kneetec | 47 |
| | HLS Noetos | 21 |
| | Optetrack | 1 |
| | Apex | 1 |
| B BRAUN | | 13 |
| | Columbus | 13 |
| TRAIBER | | 1 |
| | Excel | 1 |
| LINK | | 1 |
| | Endo-Model (hinge) | 1 |
| ***Total*** | | **3499** |

The next tables have the list of the augments and sleeves, used in the primary knee arthroplasties recorded.

| Augments | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| BIOMET | | 5 |
| | Sist. Vanguard | 5 |

| | | |
|---|---|---|
| ZIMMER | | 4 |
| | NexGen | 4 |
| LIMA | | 3 |
| | Multigen Plus | 3 |
| DePuy | | 3 |
| | Sist. PFC Sigma | 3 |
| SMITH & NEPHEW | | 2 |
| | TC-Plus | 1 |
| | Profix | 1 |
| LAFITT | | 1 |
| | Anakine | 1 |
| ***Total*** | | **18** |

| Sleeves | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| DePuy | | 8 |
| | TC3 Sigma | 6 |
| | S-Rom Noiles (hinge) | 2 |
| BIOMET | | 1 |
| | Sist. Vanguard | 1 |
| ***Total*** | | **9** |

# Knee - Revision

In the period of January 1 to December 31 2013, 272 revision knee arthroplasties were recorded.

Below is a list of the hospitals where the surgeries were performed.

Table 1 – List of Hospitals

| | *N* | % |
|---|---|---|
| Hospital da Prelada, Porto | 50 | 18,4 |
| Centro Hospitalar Leiria-Pombal | 32 | 11,8 |
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 28 | 10,3 |
| Hospital Ortopédico de Sant'Ana, Parede | 26 | 9,6 |
| Centro Hospitalar de Trás-os-Montes e Alto Douro ( Vila Real, Chaves e Lamego) | 22 | 8,1 |
| Centro Hospitalar Tondela-Viseu | 12 | 4,4 |
| Centro Hospitalar de Setúbal, Hospital Ortopédico Sant'Iago do Outão | 11 | 4,0 |
| Hospital Curry Cabral, Lisboa | 11 | 4,0 |
| Hospital Garcia de Orta, Almada | 11 | 4,0 |
| Centro Hospitalar Baixo Vouga (Aveiro, Estarreja e Águeda) | 9 | 3,3 |
| Centro Hospitalar do Tâmega e Sousa ( Penafiel e Amarante) | 9 | 3,3 |
| Hospital do Litoral Alentejano, Santiago do Cacém | 7 | 2,6 |
| Hospital Escala Braga (ex- H. de S. Marcos) | 7 | 2,6 |
| Centro Hospitalar Lisboa Norte, Hospital de Santa Maria | 6 | 2,2 |
| Hospital Militar Regional I, Porto | 3 | 1,1 |
| Centro Hospitalar do Médio Tejo (Tomar, Abrantes e Torres Novas)) | 2 | 0,7 |
| Centro Hospitalar São João (HSJ e Valongo) | 2 | 0,7 |
| Centro Hospitalar Universitário de Coimbra (HUC e Covões) | 2 | 0,7 |
| Hospital de Faro | 2 | 0,7 |
| Hospital Distrital de Torres Vedras | 2 | 0,7 |
| Hospital Nossa Senhora do Rosário, Barreiro | 2 | 0,7 |
| HOSPOR - Hospital de Santiago (Espírito Santo Saúde), Setúbal | 2 | 0,7 |

| | | |
|---|---|---|
| Misericórdia de Riba d'Ave - Hospital Narciso Ferreira , Famalicão | 2 | 0,7 |
| Unidade Local de Saúde da Guarda - Hospital de Sousa Martins | 2 | 0,7 |
| Centro Hospitalar da Póvoa do Varzim - Vila do Conde | 1 | 0,4 |
| Centro Hospitalar de Lisboa Ocidental, Hospital de S. Francisco Xavier | 1 | 0,4 |
| Hospital da Arrábida (Espírito Santo Saúde), Vila Nova de Gaia | 1 | 0,4 |
| Hospital da Cruz Vermelha Portuguesa, Lisboa | 1 | 0,4 |
| Hospital da Luz, Lisboa | 1 | 0,4 |
| Hospital da Misericórdia da Mealhada | 1 | 0,4 |
| Hospital de S. João de Deus, Montemor-o-Novo | 1 | 0,4 |
| Hospital Distrital de Santarém | 1 | 0,4 |
| Hospital Particular do Algarve - Unidade de Gambelas, Faro | 1 | 0,4 |
| Hospital Vila Franca de Xira | 1 | 0,4 |
| ***Total*** | **272** | **100,0** |

Table 2 shows the composition of the surgical team in revision knee arthroplasties, confirming a higher degree of differentiation of the surgeon when we compare this type of surgery to primary arthroplasties.

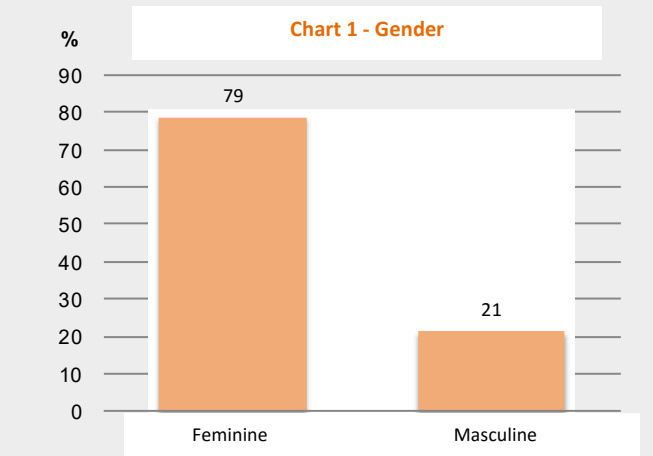
Table 2 – Surgical team

| | ***N*** | **%** |
|---|---|---|
| ***Degree of the Surgeon*** | | |
| Assistant | 50 | 18,4 |
| Head of Department | 36 | 13,2 |
| Senior Surgeon | 46 | 16,9 |
| Graduate Surgeon | 127 | 46,7 |
| Resident | 13 | 4,8 |
| | | |
| ***Degree of the first help*** | | |
| Assistant | 78 | 28,8 |
| Head of Department | 15 | 5,5 |
| Senior Surgeon | 51 | 18,8 |
| Graduate Surgeon | 86 | 31,7 |
| Resident | 41 | 15,1 |
| Total | 271 | 100,0 |

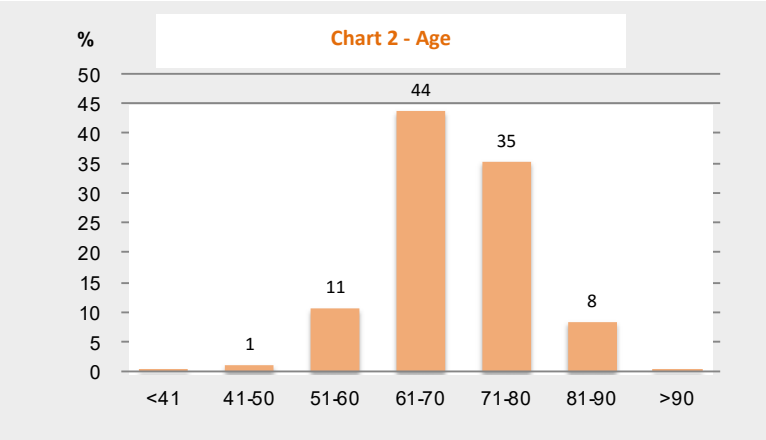
Table 3 – Identification of the demographic sample

| | N | % |
|---|---|---|
| ***Gender*** | | |
| Feminine | 214 | 78,7 |
| Masculine | 58 | 21,3 |
| | | |
| ***Age*** | | |
| <41 | 1 | 0,4 |
| 41-50 | 3 | 1,1 |
| 51-60 | 29 | 10,7 |
| 61-70 | 119 | 43,8 |
| 71-80 | 96 | 35,3 |
| 81-90 | 23 | 8,5 |
| >90 | 1 | 0,4 |
| | | |
| ***BMI*** | | |
| Underweight | 0 | 0,0 |
| Normal weight | 31 | 11,4 |
| Overweight | 119 | 43,9 |
| Obese – Class I | 82 | 30,3 |
| Obese – Class II | 30 | 11,1 |
| Obese – Class III | 9 | 3,3 |

In the distribution according to gender, there is a great predominance of females (Chart nr. 1).



The distribution of the patients by age, shows a predominance of the age groups of 61-70 and 71-80 (Chart nr. 2).




The Body Mass Index of the patients who underwent revision knee arthroplasties ranges from overweight to Obese Class I (Chart nr. 3).

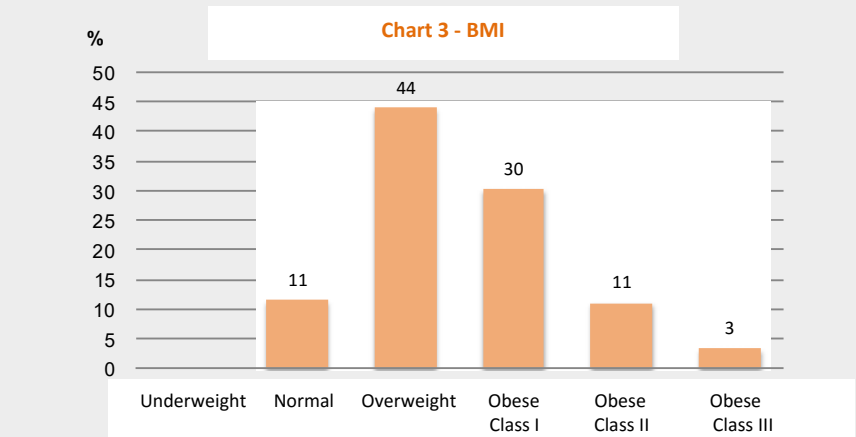
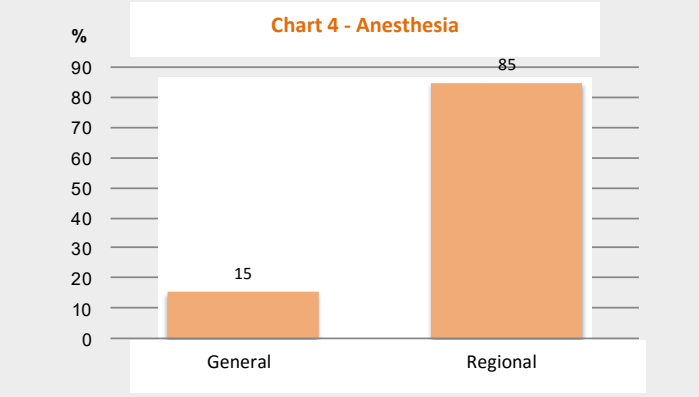


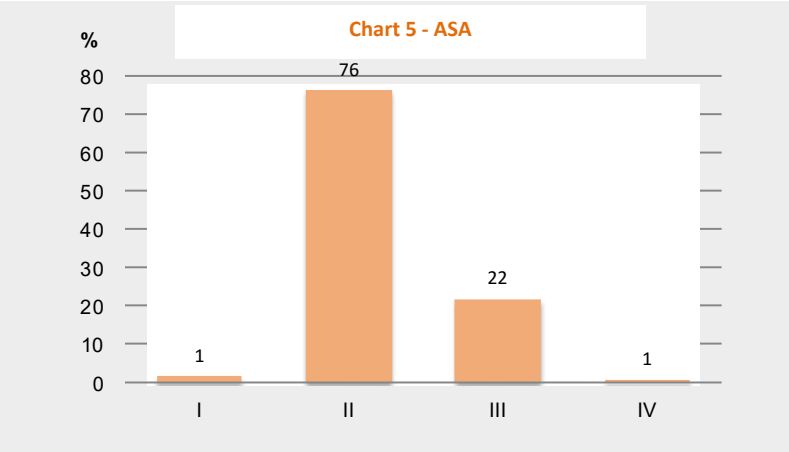
Table 4 – Identification of the Procedure

| | N | % |
|---|---|---|
| ***Anesthesia*** | | |
| General | 42 | 15,4 |
| Regional | 230 | 84,6 |
| | | |
| ***ASA*** | | |
| I | 4 | 1,5 |
| II | 207 | 76,1 |
| III | 59 | 21,7 |
| IV | 2 | 0,7 |
| | | |
| ***Physical activity*** | | |
| Inactive or dependent | 5 | 1,8 |
| Sedentary without compensatory physical activity | 90 | 33,1 |
| Light to moderate activity | 170 | 62,5 |
| Hard occupation; physical activity as a hobby | 7 | 2,6 |
| Very intense physical activity; contact or radical sports | 0 | 0,0 |
| | | |
| ***Finantial Coverage*** | | |
| Private | 5 | 1,8 |
| National Health System | 252 | 92,6 |
| Sub-system | 15 | 5,5 |

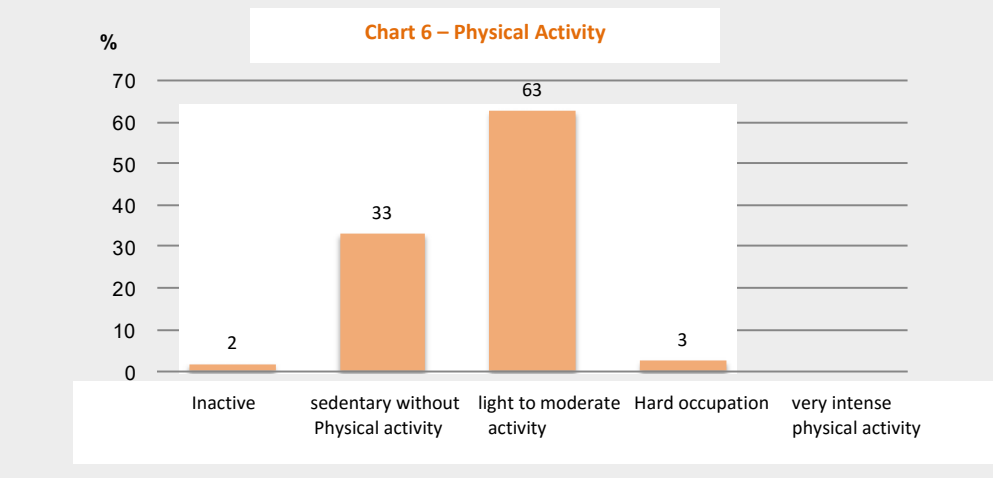
The type of anesthesia which was used the most was the regional or local anesthesia (Chart nr. 4).



The ASA peri-operative risk assessment of the patients who underwent knee arthroplasty, was predominantly II and III (Chart nr. 5).




The majority of the patients who underwent surgery were either sedentary or had a light to moderate physical activity level (Chart nr. 6).

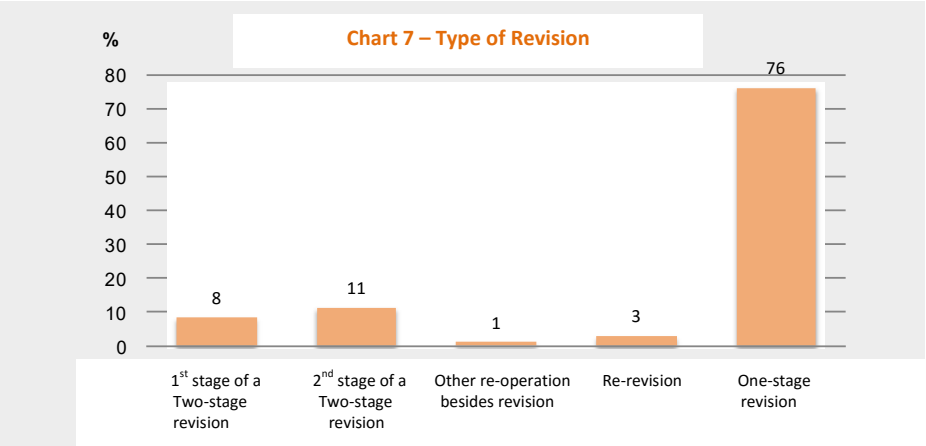



In what regards the Paying Entity, the National Health System is still the predominant paying entity of this type of surgical procedure.

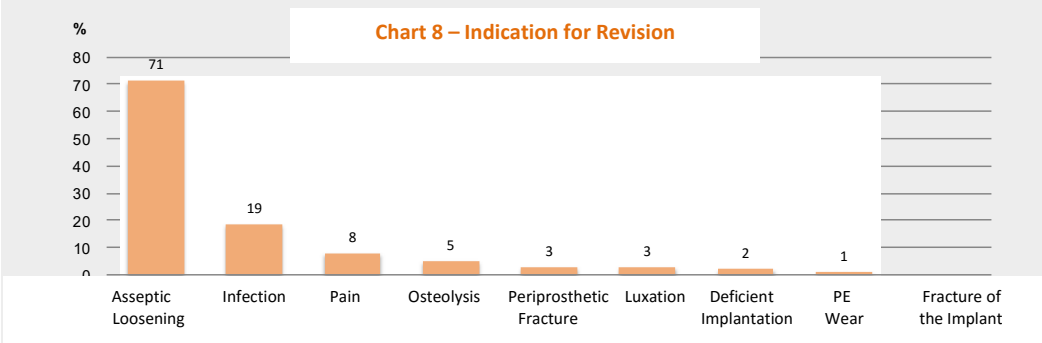
| Table 5 – Characterization of the Disease | | |
|---|---|---|
| | ***N*** | **%** |
| ***Side*** | | |
| Right | 142 | 52,2 |
| Left | 130 | 47,8 |
| | | |
| ***Procedure*** | | |
| 1st stage of a two-stage revision | 23 | 8,5 |
| 2nd stage of a two-stage revision | 31 | 11,4 |
| Other re-operation besides revision | 3 | 1,1 |
| Re - Revision | 8 | 2,9 |
| One stage revision | 207 | 76,1 |
| | | |
| ***Indication for Revision*** | | |
| Aseptic loosening | | |
| Femur | 77 | 28,3 |
| Tibia | 112 | 41,2 |
| Patella | 3 | 1,1 |
| Other | 2 | 0,7 |
| Osteolysis | | |
| Femur | 5 | 1,8 |
| Tibia | 8 | 2,9 |
| Patella | 1 | 0,4 |
| Other | 0 | 0,0 |
| Deficient Implantation | | |
| Femur | 2 | 0,7 |
| Tibia | 4 | 1,5 |
| Patella | 0 | 0,0 |
| Other | 0 | 0,0 |
| Periprosthetic fracture | | |
| Femur | 3 | 1,1 |
| Tibia | 5 | 1,8 |
| Patella | 0 | 0,0 |
| Other | 0 | 0,0 |

| | | |
|---|---|---|
| Fracture of the implant | | |
| Femur | 0 | 0,0 |
| Tibia | 0 | 0,0 |
| Patella | 0 | 0,0 |
| Other | 0 | 0,0 |
| Luxation | 8 | 2,9 |
| PE Wear | 3 | 1,1 |
| Infection | 51 | 18,8 |
| Pain | 22 | 8,1 |
| | | |
| ***Implant to be removed*** | | |
| Femoral | 163 | 59,9 |
| Cemented | 138 | *84,7* |
| Non-Cemented | 25 | *15,3* |
| Tibial | 194 | 71,3 |
| Cemented | 181 | *93,3* |
| Non-Cemented | 13 | *6,7* |
| Patellar | 27 | 9,9 |
| Cemented | 18 | *66,7* |
| Non-Cemented | 9 | *33,3* |
| Tibial Insert | 115 | 42,3 |
| | | |
| ***Comorbidities*** | | |
| HBP | 205 | 75,4 |
| Diabetes | 58 | 21,3 |
| RA | 7 | 2,6 |
| Dislipidemy | 90 | 33,1 |
| Cardiopathies | 26 | 9,6 |
| Pulmonary Disease | 11 | 4,0 |
| Peripheral vascular disease | 13 | 4,8 |
| Other | 49 | 18,0 |

The revision performed in one stage, was the procedure used the most, in the arthroplasties recorded in the Portuguese Arthroplasty Register (Chart nr. 7).




Regarding the etiology of the revision arthroplasties, the aseptic loosening was the main cause for the revision of the knee, followed by infection and pain.




NOTE: There may be more than one indication per patient.

The dominant pathology, in the field comorbidities, was the high blood pressure, followed by dislipidemy, diabetes and cardiopathies (Chart nr. 9).

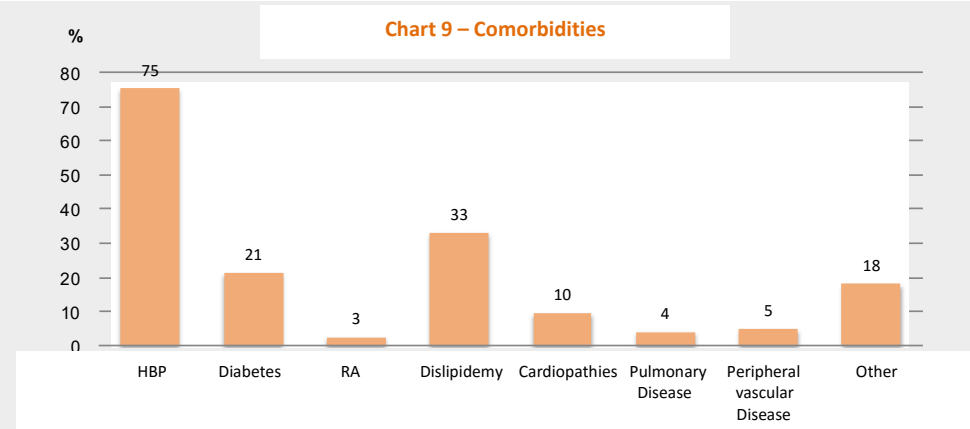
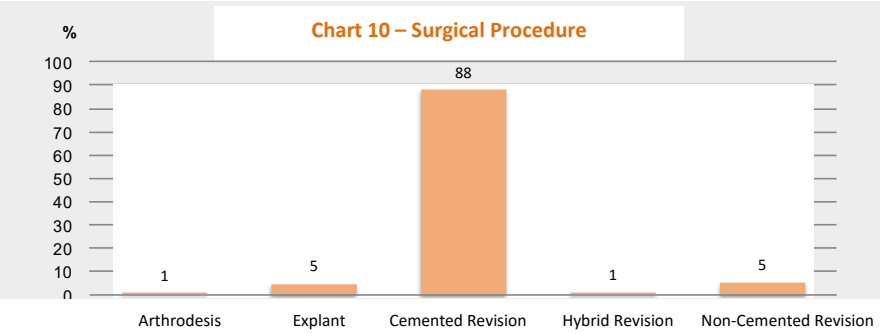



Table 6 - Surgery

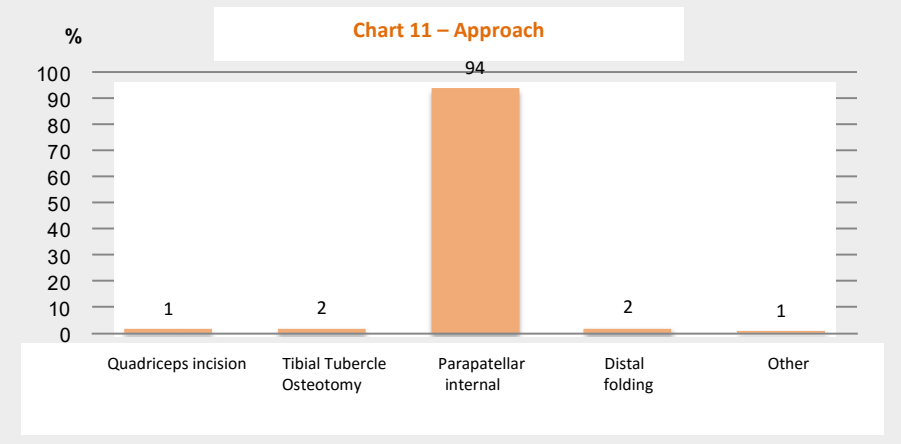
| | *N* | % |
|---|---|---|
| ***Procedure*** | | |
| Arthrodesis | 2 | 0,7 |
| Explant | 13 | 4,9 |
| Cemented Revision | 236 | 88,1 |
| Hybrid Revision | 3 | 1,1 |
| Non Cemented Revision | 14 | 5,2 |
| | | |
| ***Approach*** | | |
| Quadriceps snip | 4 | 1,5 |
| Tibial Tubercle Osteotomy | 5 | 1,8 |
| Parapatellar internal or conventional | 255 | 93,8 |
| Distally folded quadriceps tendon | 6 | 2,2 |
| Other | 2 | 0,7 |
| | | |
| ***Cement*** | | |
| No | 44 | 16,2 |
| Yes | 227 | 83,8 |

| | | |
|---|---|---|
| If yes, with antibiotics? | | |
| Yes | 187 | *82,0* |
| No | 41 | *18,0* |
| | | |
| ***Graft*** | | |
| No | 255 | 95,5 |
| Yes | 12 | 4,5 |
| Femur | 6 | 50,0 |
| Tibia | 8 | 66,7 |
| | | |
| ***Thromboprophylaxis*** | | |
| Chemical | 272 | 100,0 |
| enoxaparin (lovenox) | 255 | *93,8* |
| nadroparin (fraxiparin) | 2 | *0,7* |
| rivaroxaban (xarelto) | 15 | *5,5* |
| | | |
| ***Antibiotic prophylaxis*** | | |
| No | 6 | 2,2 |
| Yes | 266 | 97,8 |
| If yes, for how long? | | |
| 24H | 85 | 32,0 |
| 48H | 97 | 36,5 |
| >48H | 84 | 31,6 |
| | | |
| ***Antibiotics*** | | |
| Cefazoline | 119 | 43,8 |
| Cefuroxime | 38 | 14,0 |
| Vancomicine | 12 | 4,4 |
| Cefazoline + Gentamicine | 10 | 3,7 |
| Other | 93 | 34,2 |
| | | |
| ***Platform*** | | |
| Fixed | 237 | 87,1 |
| Mobile bearing | 35 | 12,9 |

The majority of the revision knee arthroplasties was cemented (Chart nr. 10), followed by the ones where cement and antibiotics were used (82% of the cemented arthroplasties).

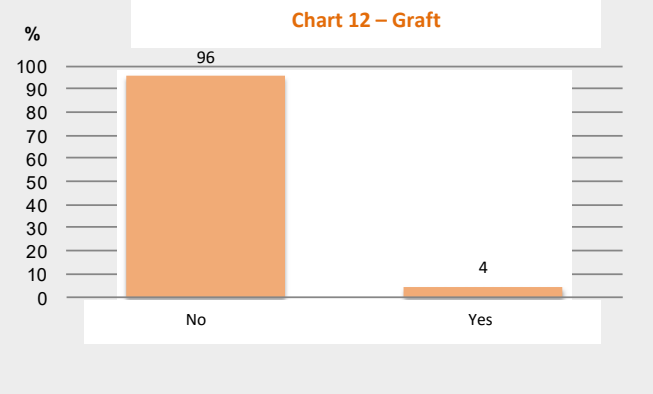


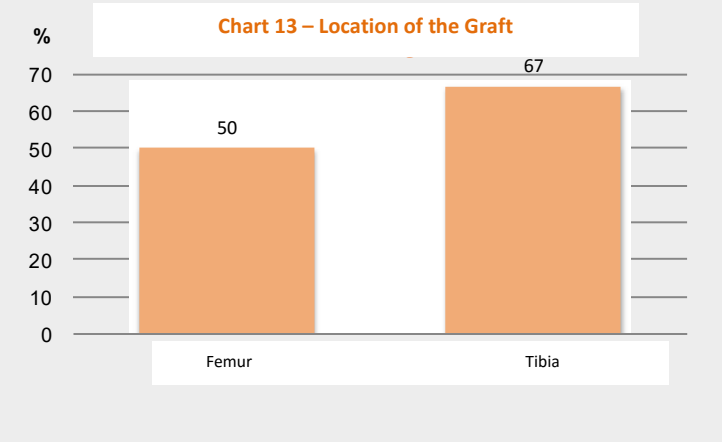

The approach used (Chart nr. 11) was mainly the internal parapatellar (in 93,8% of the cases).




Thromboprophylaxis is systematic (100%), and enoxaparin continues to be the most widely used drug with 93.8% followed by 5.5% rivaroxaban.

Graft was used (Chart nr. 12) in 4% of the cases of revision, and in chart nr. 13 we can see where the graft was used (location).




Antibiotic prophylaxis is conducted in 97.8% of the knee revision arthroplasties, mainly for a period of up to 48 hours.

The most used type of antibiotics used was the cefazoline.

In 87.1% of the revision surgeries were used fixed plates, while in 12.9% of cases mobile bearing platforms were used.

We present below the implants used in revision knee arthroplasties, registered from January 1 to December 31, 2013.

The following table lists all the femoral components used.

| Femoral Component | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 47 |
| | Legion | 22 |
| | Profix | 19 |
| | TC-Plus | 3 |
| | RT Modular-Plus (hinge) | 3 |
| DePuy | | 42 |
| | TC3 Sigma | 21 |
| | Sist. PFC Sigma | 12 |
| | S-Rom Noiles (hinge) | 9 |
| WRIGHT | | 25 |
| | Advance | 25 |
| STRYKER | | 21 |
| | Sist. Triathlon | 21 |
| ZIMMER | | 15 |
| | NexGen | 8 |
| | LCCK (Legacy Constrained) | 4 |
| | RHK (hinge) | 2 |
| | Natural Knee | 1 |
| BIOMET | | 11 |
| | Vanguard SSK (revisão) | 5 |
| | Sist. Vanguard | 4 |
| | Sist. Perfomance | 1 |
| | AGC | 1 |

| | | |
|---|---|---|
| LIMA | | 5 |
| | Multigen Plus CCK (revisão) | 4 |
| | Multigen Plus | 1 |
| MBA | | 4 |
| | HLS Noetos | 2 |
| | Optetrack | 1 |
| | Apex | 1 |
| LAFITT | | 3 |
| | Classic | 2 |
| | Anakine | 1 |
| LINK | | 2 |
| | Endo-Model (hinge) | 2 |
| ***Total*** | | **175** |

The table below lists the patellar components used.

| Patellar Component | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| DePuy | | 23 |
| | Sist. PFC Sigma | 14 |
| | TC3 Sigma | 7 |
| | S-Rom Noiles (hinge) | 2 |
| SMITH & NEPHEW | | 21 |
| | Profix | 13 |
| | Legion | 5 |
| | TC-Plus | 3 |
| STRYKER | | 8 |
| | Sist. Triathlon | 8 |
| WRIGHT | | 6 |
| | Advance | 6 |
| ZIMMER | | 3 |
| | NexGen | 3 |
| MBA | | 3 |

| | | |
|---|---|---|
| | Optetrack | 1 |
| | Kneetec | 1 |
| | HLS Noetos | 1 |
| LIMA | | 3 |
| | Multigen Plus | 2 |
| | Multigen Plus CCK (revisão) | 1 |
| BIOMET | | 3 |
| | Vanguard SSK (revisão) | 2 |
| | Sist. Vanguard | 1 |
| EXACTECH | | 1 |
| | Optetrack | 1 |
| ***Total*** | | **71** |

This next table presents the tibial components which were recorded in the Portuguese Arthroplasty Register.

| Tibial Component | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 51 |
| | Legion | 24 |
| | Profix | 23 |
| | RT Modular-Plus (hinge) | 3 |
| | TC-Plus | 1 |
| DePuy | | 36 |
| | Sist. PFC Sigma | 16 |
| | TC3 Sigma | 12 |
| | S-Rom Noiles (hinge) | 8 |
| ZIMMER | | 30 |
| | NexGen | 21 |
| | LCCK (Legacy Constrained) | 5 |
| | RHK (hinge) | 2 |
| | Natural Knee | 2 |
| WRIGHT | | 24 |
| | Advance | 24 |

| | | |
|---|---|---|
| STRYKER | | 19 |
| | Sist. Triathlon | 19 |
| BIOMET | | 10 |
| | Vanguard SSK (revisão) | 6 |
| | Sist. Vanguard | 3 |
| | AGC | 1 |
| LIMA | | 8 |
| | Multigen Plus CCK (revisão) | 4 |
| | Multigen Plus | 4 |
| MBA | | 5 |
| | Optetrack | 1 |
| | HLS Noetos | 3 |
| | Apex | 1 |
| EXACTECH | | 2 |
| | Optetrack | 2 |
| LINK | | 1 |
| | Endo-Model (hinge) | 1 |
| LAFITT | | 1 |
| | Classic | 1 |
| ***Total*** | | **187** |

The next table shows the femoral and tibial stems which were used in the knee revision arthroplasties.

| Tibial and Femoral Stems | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 80 |
| | Legion | 39 |
| | Profix | 38 |
| | TC-Plus | 3 |
| DePuy | | 41 |
| | TC3 Sigma | 22 |

| | | |
|---|---|---|
| | Sist. PFC Sigma | 19 |
| WRIGHT | | 27 |
| | Advance | 27 |
| STRYKER | | 25 |
| | Sist. Triathlon | 25 |
| ZIMMER | | 19 |
| | NexGen | 15 |
| | LCCK (Legacy Constrained) | 4 |
| LIMA | | 9 |
| | Multigen Plus CCK (revisão) | 5 |
| | Multigen Plus | 4 |
| BIOMET | | 6 |
| | Vanguard SSK (revisão) | 5 |
| | AGC | 1 |
| MBA | | 4 |
| | Apex | 2 |
| | Optetrack | 1 |
| | HLS Noetos | 1 |
| LAFITT | | 1 |
| | Classic | 1 |
| ***Total*** | | **212** |

The following table lists all the types of polyethylene which were used.

| Polyethylene | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| SMITH & NEPHEW | | 61 |
| | Profix | 36 |
| | Legion | 20 |
| | RT Modular-Plus (hinge) | 3 |
| | TC-Plus | 2 |
| DePuy | | 30 |
| | TC3 Sigma | 17 |

| | | |
|---|---|---|
| | Sist. PFC Sigma | 7 |
| | S-Rom Noiles (hinge) | 6 |
| ZIMMER | | 23 |
| | NexGen | 12 |
| | LCCK (Legacy Constrained) | 7 |
| | RHK (hinge) | 2 |
| | Natural Knee | 2 |
| WRIGHT | | 23 |
| | Advance | 23 |
| STRYKER | | 14 |
| | Sist. Triathlon | 14 |
| BIOMET | | 7 |
| | Sist. Vanguard | 4 |
| | Vanguard SSK (revisão) | 2 |
| | Oxford (uni) | 1 |
| LIMA | | 6 |
| | Multigen Plus CCK (revisão) | 3 |
| | Multigen Plus | 3 |
| MBA | | 4 |
| | Optetrack | 1 |
| | HLS Noetos | 3 |
| EXACTECH | | 2 |
| | Optetrack | 2 |
| LAFITT | | 1 |
| | Anakine | 1 |
| B BRAUN | | 1 |
| | Columbus | 1 |
| **Total** | | **172** |

The following tables reveal the augments and sleeved used in the revision knee arthroplasties, which were recorded in the Portuguese Arthroplasty Register.

| Augments | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| DePuy | | 39 |
| | Sist. PFC Sigma | 24 |
| | TC3 Sigma | 12 |
| | S-Rom Noiles (hinge) | 3 |
| SMITH & NEPHEW | | 38 |
| | Legion | 23 |
| | Profix | 9 |
| | RT Modular-Plus (hinge) | 5 |
| | TC-Plus | 1 |
| STRYKER | | 34 |
| | Sist. Triathlon | 34 |
| ZIMMER | | 25 |
| | NexGen | 16 |
| | LCCK (Legacy Constrained) | 5 |
| | RHK (hinge) | 3 |
| | Natural Knee | 1 |
| WRIGHT | | 24 |
| | Advance | 24 |
| MBA | | 16 |
| | Optetrack | 5 |
| | Apex | 10 |
| | HLS Noetos | 1 |
| BIOMET | | 9 |
| | AGC | 5 |
| | Vanguard SSK (revisão) | 4 |
| LIMA | | 8 |
| | Multigen Plus | 5 |
| | Multigen Plus CCK (revisão) | 3 |
| EXACTECH | | 5 |
| | Optetrack | 5 |
| ***Total*** | | **198** |

| Sleeves | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| DePuy | | 27 |
| | TC3 Sigma | 11 |
| | S-Rom Noiles (hinge) | 10 |
| | Sist. PFC Sigma | 6 |
| STRYKER | | 6 |
| | Sist. Triathlon | 6 |
| SMITH & NEPHEW | | 4 |
| | Legion | 4 |
| ZIMMER | | 3 |
| | NexGen | 2 |
| | LCCK (Legacy Constrained) | 1 |
| LIMA | | 3 |
| | Multigen Plus CCK (revisão) | 3 |
| WRIGHT | | 1 |
| | Advance | 1 |
| BIOMET | | 1 |
| | Vanguard SSK (revisão) | 1 |
| ***Total*** | | **45** |

## Shoulder - Primary

In the period of January 1 until December 31 2013, 224 primary shoulder arthroplasties were performed.

Table 1 – List of the hospitals where the surgeries were performed

| | *N* | % |
|---|---|---|
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 37 | 16,5 |
| Centro Hospitalar do Porto - Hospital Geral de Santo António | 33 | 14,7 |
| Hospital CUF Descobertas, Lisboa | 25 | 11,2 |
| Hospital Curry Cabral, Lisboa | 18 | 8,0 |
| Centro Hospitalar Lisboa Norte, Hospital de Santa Maria | 12 | 5,4 |
| Centro Hospitalar Tondela-Viseu | 12 | 5,4 |
| Hospital Ortopédico de Sant'Ana, Parede | 11 | 4,9 |
| Hospital Escala Braga (ex- H. de S. Marcos) | 10 | 4,5 |
| Hospital do Litoral Alentejano, Santiago do Cacém | 9 | 4,0 |
| Centro Hospitalar de Lisboa Ocidental, Hospital de S. Francisco Xavier | 7 | 3,1 |
| Centro Hospitalar de Setúbal, Hospital Ortopédico Sant'Iago do Outão | 6 | 2,7 |
| Hospital da Prelada, Porto | 6 | 2,7 |
| Hospital de Faro | 5 | 2,2 |
| Centro Hospitalar Universitário de Coimbra (HUC e Covões) | 4 | 1,8 |
| Hospital de Ponta Delgada, Açores | 4 | 1,8 |
| Centro Hospitalar de Vila Nova de Gaia e Espinho | 3 | 1,3 |
| Centro Hospitalar do Tâmega e Sousa ( Penafiel e Amarante) | 3 | 1,3 |
| Hospital Garcia de Orta, Almada | 3 | 1,3 |
| Unidade Local de Saúde da Guarda - Hospital de Sousa Martins | 3 | 1,3 |
| Centro Hospitalar Baixo Vouga (Aveiro, Estarreja e Águeda) | 2 | 0,9 |
| Centro Hospitalar de Lisboa Central, Hospital de S. José | 2 | 0,9 |
| Centro Hospitalar de Trás-os-Montes e Alto Douro ( Vila Real, Chaves e Lamego) | 2 | 0,9 |
| Hospital da Arrábida (Espírito Santo Saúde), Vila Nova de Gaia | 2 | 0,9 |
| Hospital Privado de Alfena (Grupo Trofa Saúde) | 2 | 0,9 |
| Hospital Distrital de Ovar (Hospital Dr. Francisco Zagalo) | 1 | 0,4 |
| Hospital dos Lusíadas, Lisboa | 1 | 0,4 |
| Hospital Vila Franca de Xira | 1 | 0,4 |

| | | |
|---|---|---|
| **Total** | **224** | **100,0** |

Table 2 presents the composition of the surgical team.

Table 2 – Surgical team

| | *N* | % |
|---|---|---|
| ***Degree of the Surgeon*** | | |
| Assistant | 100 | 44,6 |
| Head of Department | 27 | 12,1 |
| Senior Surgeon | 3 | 1,3 |
| Graduate Surgeon | 79 | 35,3 |
| Resident | 15 | 6,7 |
| | | |
| ***Degree of the first help*** | | |
| Assistant | 58 | 25,9 |
| Head of Department | 9 | 4,0 |
| Senior Surgeon | 7 | 3,1 |
| Graduate Surgeon | 40 | 17,9 |
| Resident | 110 | 49,1 |

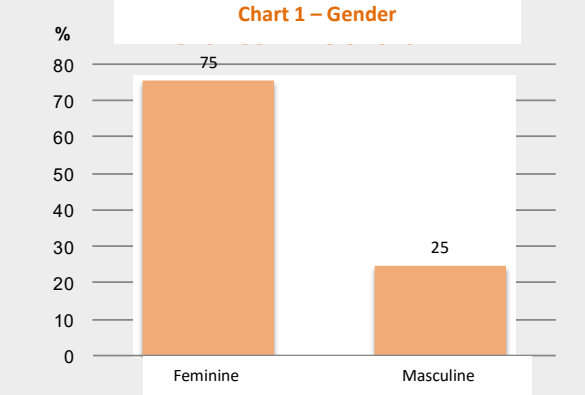
Table 3 presents the demographic identification of the patients who underwent shoulder arthroplasties.

Table 3 – Identification of the demographic sample

| | *N* | % |
|---|---|---|
| ***Gender*** | | |
| Feminine | 169 | 75,4 |
| Masculine | 55 | 24,6 |
| | | |
| ***Age*** | | |
| <31 | 1 | 0,4 |
| 31-40 | 3 | 1,3 |
| 41-50 | 6 | 2,7 |

| | | |
|---|---|---|
| 51-60 | 27 | 12,1 |
| 61-70 | 74 | 33,2 |
| 71-80 | 75 | 33,6 |
| 81-90 | 37 | 16,6 |
| | | |
| ***BMI*** | | |
| Underweight | 0 | 0,0 |
| Normal weight | 59 | 26,3 |
| Overweight | 111 | 49,6 |
| Obese – Class I | 42 | 18,8 |
| Obese – Class II | 10 | 4,5 |
| Obese – Class III | 2 | 0,9 |

Chart nr. 1 shows the distribution of patients by gender.




The distribution by age was presented in chart nr. 2, where one can observe a predominance of the following age groups: 61-70 and 71-80.

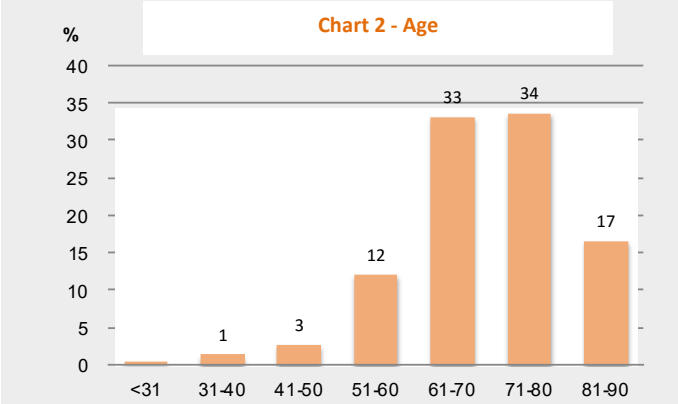
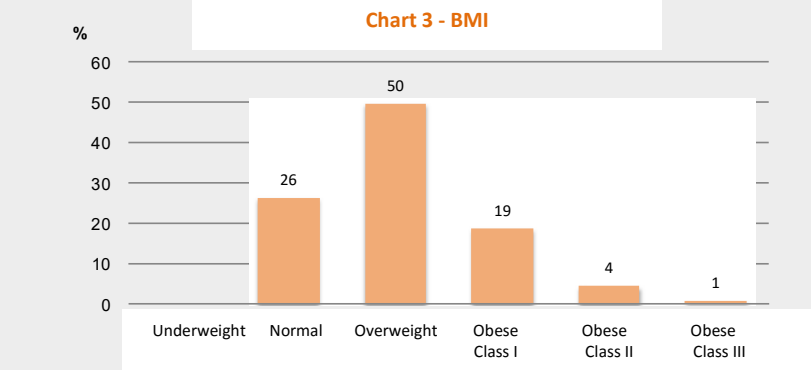



Chart nr. 3 reveals the Body Mass Index of the patients who underwent shoulder arthroplasty.

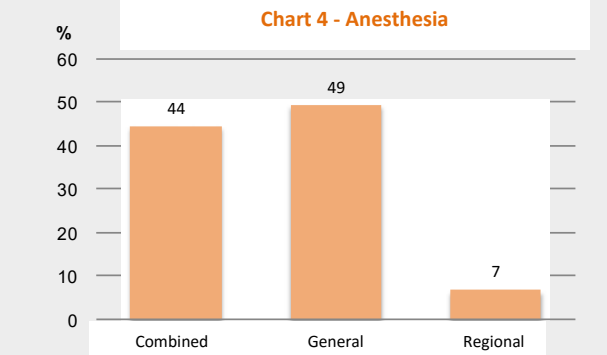



| Table 4 – Identification of the procedure | | |
|---|---|---|
| | ***N*** | **%** |
| ***Anesthesia*** | | |
| Combined (general + anesthesia of the brachial plexus) | 99 | 44,2 |
| General | 110 | 49,1 |
| Regional | 15 | 6,7 |
| | | |
| ***ASA*** | | |
| I | 6 | 2,7 |
| II | 149 | 66,5 |
| III | 67 | 29,9 |
| IV | 2 | 0,9 |
| | | |
| ***Physical activity*** | | |
| Inactive or dependent | 3 | 1,3 |
| Sedentary without any compensatory physical activity | 113 | 50,7 |
| Light to moderate physical activity | 90 | 40,4 |
| Hard occupation; physical activity as a hobby | 16 | 7,2 |
| Very intensive physical activity; contact or radical sports | 1 | 0,4 |
| | | |
| ***Paying Entity*** | | |
| Private | 7 | 3,1 |
| Insurance | 19 | 8,5 |
| National Health System | 181 | 81,2 |

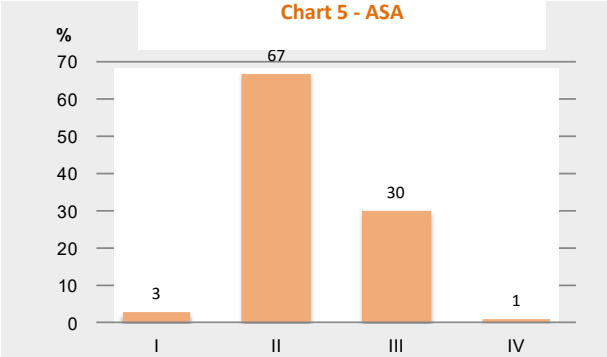
| | | |
|---|---|---|
| Sub-system | 16 | 7,2 |

In what regards the Paying Entity, the National Health System is still the predominant one, when it comes to payment of this type of surgical procedure.

The type of anesthesia which was used in shoulder arthroplasties can be found in Chart nr. 4.




The ASA peri-operative risk assessment level of the patients who had shoulder arthroplasty surgery can be found on Chart nr. 5.




The level of physical activity of the patients who underwent shoulder arthroplasty surgery, is presented in Chart nr. 6.

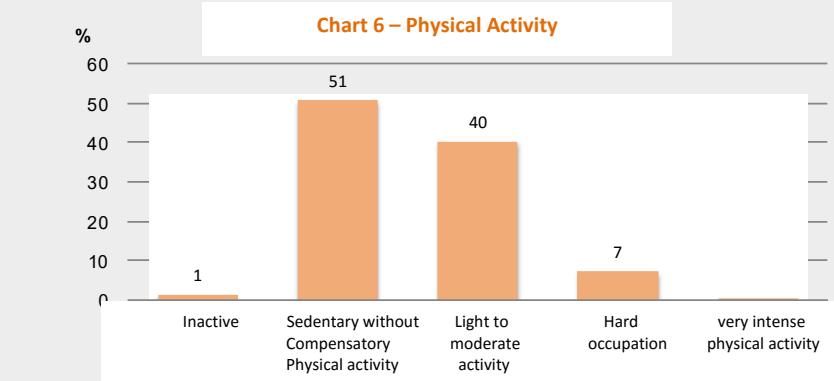


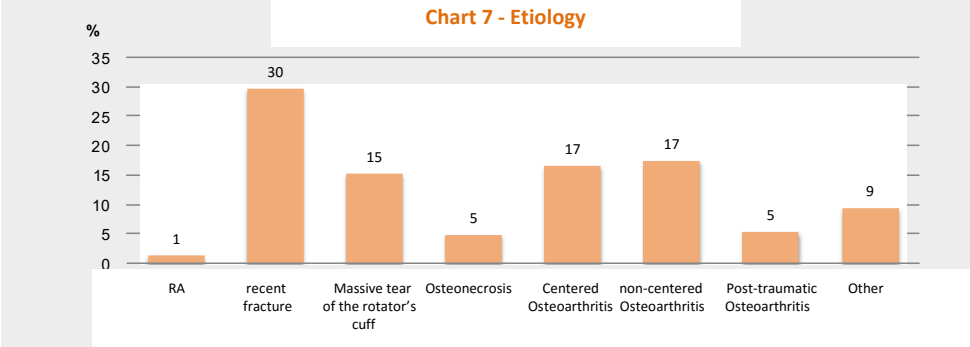

Table 5 presents the characterization of the disease, the types of surgical procedures and the comorbidities.

Table 5 – Characterization of the disease

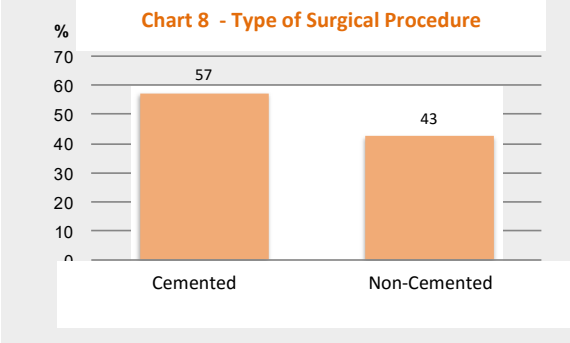
| | *N* | % |
|---|---|---|
| ***Etiology*** | | |
| RA | 3 | 1,3 |
| Recent fracture | 66 | 29,6 |
| Massive lesion of the cuff | 34 | 15,2 |
| Osteonecrosis | 11 | 4,9 |
| Centered osteoarthritis | 37 | 16,6 |
| Non-centered osteoarthritis | 39 | 17,5 |
| Post traumatic osteoarthritis | 12 | 5,4 |
| Other | 21 | 9,4 |
| | | |
| ***Previous Surgery*** | | |
| No | 200 | 89,7 |
| Yes | 23 | 10,3 |
| | | |
| ***Type of surgical procedure*** | | |
| Cemented | 128 | 57,4 |
| Non-Cemented | 95 | 42,6 |
| | | |
| ***Comorbidities*** | | |
| HBP | 150 | 67,0 |
| Diabetes | 39 | 17,4 |

| | | |
|---|---|---|
| RA | 3 | 1,3 |
| Dislipidemy | 84 | 37,5 |
| Cardiopathies | 28 | 12,5 |
| Pulmonary disease | 12 | 5,4 |
| Peripheral vascular disease | 21 | 9,4 |
| Other | 24 | 10,7 |

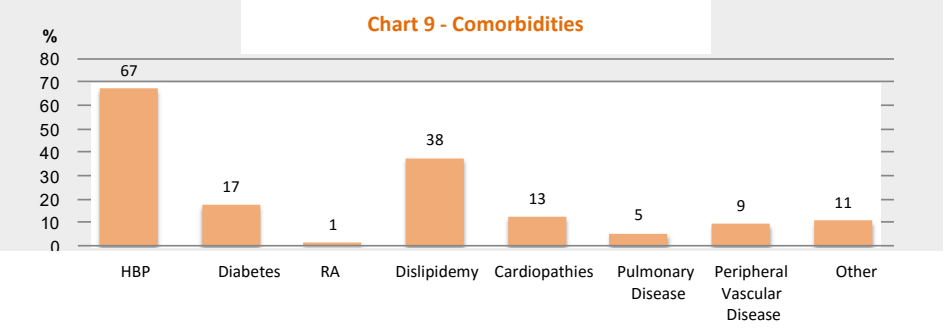
In Etiology, one can observe a preponderance of osteoarthritis, of the fractures and lesions of the rotator's cuff.




The main type of procedure is the cemented arthroplasty.



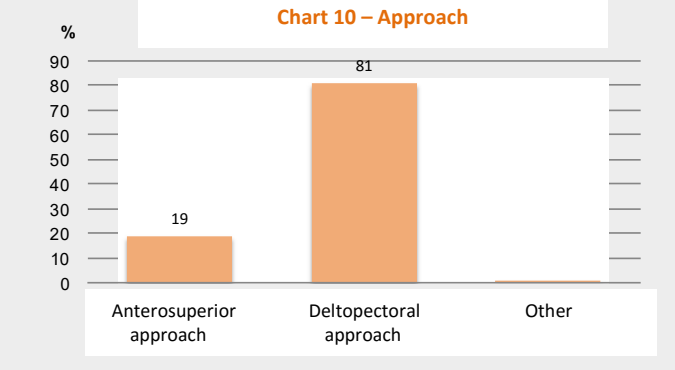

The dominant pathology in the comorbidities is the high blood pressure, followed by dislipidemy, diabetes and cardiopathies.



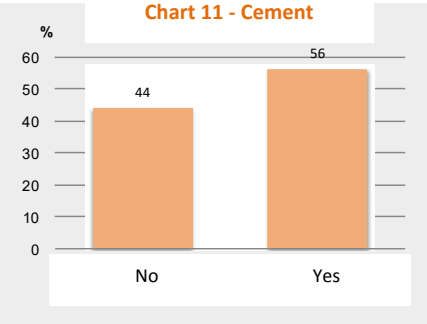
| Table 6 – Surgery | | |
|---|---|---|
| | ***N*** | **%** |
| ***Approach*** | | |
| Anterosuperior | 42 | 18,8 |
| Deltopectoral | 180 | 80,7 |
| Other | 1 | 0,4 |
| | | |
| ***Cement*** | | |
| No | 98 | 43,9 |
| Yes | 125 | 56,1 |
| If Yes, with antibiotics ? | | |
| Yes | 83 | 66,4 |
| No | 42 | 33,6 |
| | | |
| ***Implant*** | | |
| Hemiarthroplasty | 74 | 33,2 |
| Inverted | 128 | 57,4 |
| Total | 21 | 9,4 |
| | | |
| ***Thromboprophylaxis*** | | |
| Mechanical | 3 | 1,3 |
| Chemical | 155 | 69,5 |
| enoxaparin (lovenox) | 154 | 99,4 |
| nadroparin (fraxiparin) | 1 | 0,6 |
| No Prophylaxis | 65 | 29,1 |
| | | |
| ***Antibiotic prophylaxis*** | | |
| No | 2 | 0,9 |
| Yes | 221 | 99,1 |
| If yes, for how long? | | |
| 24H | 111 | 50,2 |
| 48H | 102 | 46,2 |
| >48H | 8 | 3,6 |

| | | |
|---|---|---|
| ***Antibiotics*** | | |
| Cefazoline | 121 | 55,0 |
| Cefuroxime | 28 | 12,7 |
| Other | 61 | 27,7 |

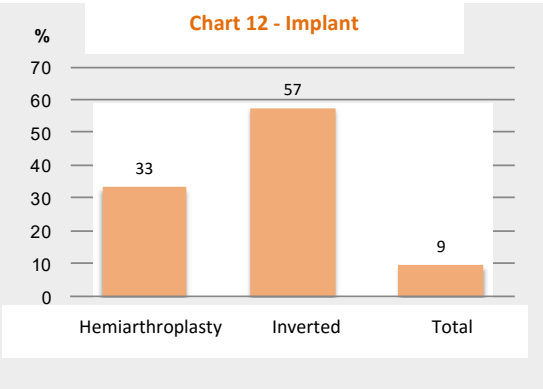
The main approach used was the deltopectoral (Chart nr. 10).



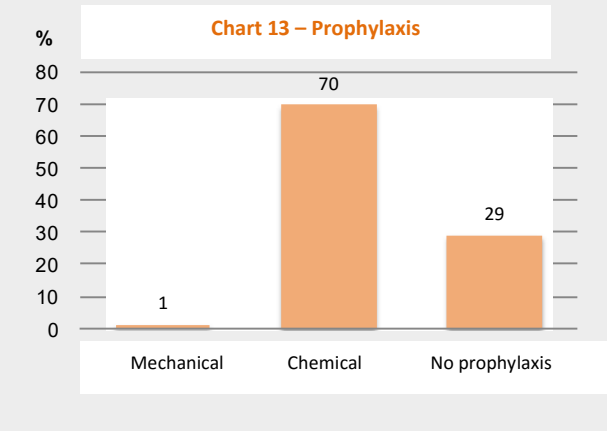

The predominant type of arhroplasty was the cemented one.




The inverted arthroplasty was the type which was used the most (57% of the arthroplasties), followed by the hemiarthroplasty (33% of the cases).



In 70% of the patients, chemical thromboprophylaxis was performed, and the predominant chemical used was the enoxaparin, while in 29% of the cases no prophylaxis was done.




The antibiotic prophylaxis was done in 99,1% of the shoulder arthroplasties, in the great majority of cases for a period of 48 hours, and the antibiotic which was used the most was cefazoline.

We present below the implants used in shoulder arthroplasties recorded from January 1 to December 31, 2013.

| Shoulder | | |
|---|---|---|
| ***Company*** | ***Model*** | ***N*** |
| Depuy | | 114 |
| | Delta Xtend | 91 |
| | Global Fx | 8 |
| | Global Advantage | 7 |
| | Global AP | 6 |
| | Unite | 2 |
| LIMA | | 47 |
| | SMR | 39 |
| | SMR Reverse | 6 |
| | SMR Trauma | 2 |
| Tornier | | 32 |
| | Aequalis Reversed | 25 |
| | Aequalis | 4 |

| | | |
|---|---|---|
| | Aequalis Reversed II | 3 |
| Biomet | | 10 |
| | Comprehensive | 10 |
| Synthes | | 8 |
| | EPOCA | 8 |
| Zimmer | | 6 |
| | Bigliani Anatomic Shoulder | 4 |
| | Anatomical shoulder fractures | 2 |
| FH | | 5 |
| | Arrow | 5 |
| Smith & Nephew | | 1 |
| Evolutis | | 1 |
| | Unic | 1 |
| ***Total*** | | **224** |

# Shoulder - Revision

In the time period comprised between January 1 and December 31 2013, 9 revision shoulder arthroplasties were recorded in the Portuguese Arthroplasty Register.

Table 1 – List of hospitals

| | *N* | % |
|---|---|---|
| Centro Hospitalar do Porto – Hospital Geral de Santo António | 3 | 33,3 |
| Hospital Curry Cabral, Lisboa | 2 | 22,2 |
| Hospital CUF Descobertas, Lisboa | 2 | 22,2 |
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 1 | 11,1 |
| Hospital Escola de Braga (ex - H. S. Marcos) | 1 | 11,1 |
| *Total* | 9 | 100,0 |

Below, we present the list of implants used in the revision shoulder arthroplasties, registered between January 1 and December 31 2013.

Shoulder

| ***Company*** | ***Model*** | ***N*** |
|---|---|---|
| LIMA | | 4 |
| | SMR | 4 |
| Tornier | | 2 |
| | Aequalis Reversed | 2 |
| Depuy | | 2 |
| | Global AP | 1 |
| | Delta Xtend | 1 |
| Tecres | | 1 |
| | Spacer S | 1 |
| ***Total*** | | **9** |

## Wrist and Hand - Primary

In the period between January 1 and December 31 2013, 59 primary hand arthroplasties were registered.

Table 1 – List of hospitals

| | *N* | % |
|---|---|---|
| Hospital Escala Braga (ex- H. de S. Marcos) | 19 | 32,2 |
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 17 | 28,8 |
| Hospital da Arrábida (Espírito Santo Saúde), Vila Nova de Gaia | 10 | 16,9 |
| Hospital da Prelada, Porto | 4 | 6,8 |
| Hospital Ortopédico de Sant'Ana, Parede | 4 | 6,8 |
| Centro Hospitalar Baixo Vouga (Aveiro, Estarreja e Águeda) | 3 | 5,1 |
| Centro Hospitalar de Lisboa Ocidental, Hospital de S. Francisco Xavier | 2 | 3,4 |
| *Total* | 59 | 100,0 |

The tables below feature the hand arthroplasties recorded in the Portuguese Arthroplasty Register.

Table 2 – Surgical team

| | *N* | % |
|---|---|---|
| ***Degree of the Surgeon*** | | |
| Assistant | 10 | 16,9 |
| Senior Surgeon | 8 | 13,6 |
| Graduate Surgeon | 37 | 62,7 |
| Resident | 4 | 6,8 |
| | | |
| ***Degree of the first help*** | | |
| Assistant | 16 | 27,1 |
| Senior Surgeon | 6 | 10,2 |
| Graduate Surgeon | 8 | 13,6 |

| | | |
|---|---|---|
| Resident | 29 | 49,2 |

Table 3 – Identification of the surgical procedure

| | *N* | % |
|---|---|---|
| ***Anesthesia*** | | |
| General | 35 | 59,3 |
| Regional | 24 | 40,7 |
| | | |
| ***ASA*** | | |
| I | 7 | 11,9 |
| II | 51 | 86,4 |
| III | 1 | 1,7 |
| | | |
| ***Physical Activity*** | | |
| Sedentary without any compensatory physical activity | 15 | 25,4 |
| Light to moderate physical activity | 39 | 66,1 |
| Hard occupation: physical activity as a hobby | 5 | 8,5 |
| | | |
| ***Paying Entity*** | | |
| Private | 1 | 1,7 |
| Insurance | 1 | 1,7 |
| National Health System | 49 | 83,1 |
| Sub-system | 8 | 13,6 |

Table 4 – Characterization of the disease

| | *N* | *%* |
|---|---|---|
| ***Other Associated Pathologies*** | | |
| HBP | 31 | 52,5 |
| Diabetes | 6 | 10,2 |
| RA | 5 | 8,5 |
| Dislipidemy | 12 | 20,3 |

| | | |
|---|---|---|
| Cardiopathies | 3 | 5,1 |
| Lung Disease | 1 | 1,7 |
| Peripheral vascular disease | 0 | 0,0 |
| Other | 12 | 20,3 |
| | N | % |

| Table 5 – Surgery | | |
|---|---|---|
| | ***N*** | **%** |
| ***Side*** | | |
| Right | 55 | 93,2 |
| Left | 4 | 6,8 |
| | | |
| ***Joint replaced*** | | |
| Radiocarpal joint | 2 | 3,4 |
| Right | 1 | 50,0 |
| Left | 1 | 50,0 |
| Distal Radial-Ulnar joint | 0 | 0,0 |
| Trapeziometacarpal joint | 51 | 86,4 |
| Right | 32 | *62,7* |
| Left | 19 | *37,3* |
| Metacarpophalangeal joint | 3 | 5,1 |
| 2nd finger – Right | 2 | *66,7* |
| 3th finger – Right | 3 | *100,0* |
| 4th finger – Right | 2 | *66,7* |
| 5th finger – Right | 2 | *66,7* |
| Interphalangeal proximal joint | 3 | 5,1 |
| 3rd finger – Right | 3 | *100,0* |
| 4th finger – Right | 2 | *66,7* |
| | | |
| ***Type of Procedure*** | | |
| Cemented | 2 | 3,4 |
| Non-Cemented | 57 | 96,6 |
| | | |
| ***Etiology*** | | |

| | | |
|---|---|---|
| Degenerative or primary arthritis | 53 | 89,8 |
| Inflamatory or Rheumatic | 5 | 8,5 |
| Post-Traumatic | 1 | 1,7 |

Below, we list the implants used in the primary hand and wrist arthroplasties.

| ***Company*** | ***Model*** | ***N*** |
|---|---|---|
| BIOMET | | 21 |
| | Arpe | 21 |
| Medcomtech/Ascension | | 15 |
| | Pirodisk | 15 |
| DePuy | | 10 |
| | Roseland | 6 |
| | Neuflex | 4 |
| MBA | | 4 |
| | Re-motion | 2 |
| | Pyrocardan | 2 |
| Memometal-Stryker | | 3 |
| | Ivory | 3 |
| LÉPINE | | 3 |
| | MAIA | 3 |
| SBI | | 2 |
| | MTP | 1 |
| | PIP 40 | 1 |
| Tornier | | 1 |
| | Pi2 | 1 |
| ***Total*** | | **59** |

# Wrist and Hand - Revision

In the period of January 1 2013 until December 31 2013, 4 revision hand arthroplasties were registered.

Table 1 – List of Hospitals

| | *N* | % |
|---|---|---|
| Centro Hospitalar de Setúbal, Hospital Ortopédico Santiago do Outão | 2 | 50 |
| Hospital Ortopédico de Sant'Ana, Parede | 2 | 50 |
| *Total* | 4 | 100,0 |

In the next table, we list the implants used in the hand and wrist arthroplasties.

| ***Company*** | ***Model*** | ***N*** |
|---|---|---|
| DePuy | | 1 |
| | Arthrodesis plate | 1 |
| LÉPINE | | 1 |
| | MAIA (Neck offset L) | 1 |
| BIOMET | | 1 |
| | Cement | 1 |
| ***Total*** | | **3** |

## Foot and Ankle - Primary

In the period of January 1 2013 to December 31 2013 were recorded 7 arthroplasties of the foot and ankle.

Table 1 – List of Hospitals

| | N | % |
|---|---|---|
| Hospital Curry Cabral, Lisboa | 3 | 42,9 |
| Centro Hospitalar do Tâmega e Sousa ( Penafiel e Amarante) | 1 | 14,3 |
| Clínica de Santo António - Clisa, Reboleira, Amadora | 1 | 14,3 |
| Hospital de Faro | 1 | 14,3 |
| Hospital Escala Braga (ex- H. de S. Marcos) | 1 | 14,3 |
| ***Total*** | **7** | **100,0** |

We present below, the implants used in arthroplasties of the ankle and foot, recorded from January 1 to December 31, 2013, and it should be noted that 4 of them are ankle arthroplasties and 3 of them are foot arthroplasties.

| ***Company*** | ***Model*** | ***N*** |
|---|---|---|
| Integra | | 4 |
| | Salto Talaris | 2 |
| | Hintegra | 2 |
| Implants International | | 3 |
| | Roto-Glide | 3 |
| ***Total*** | | ***7*** |

## Foot and Ankle - Revision

In the period from January 1st until December 31st 2013 there were no foot and ankle revision arthroplasties recorded in the Portuguese Arthroplasty Register.

## Elbow - Primary

In the period of January 1st until December 31st 2013, 18 primary elbow arthroplasties were registered.

Table 1 – List of Hospitals

| | N | % |
|---|---|---|
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 5 | 27,8 |
| Centro Hospitalar de Setúbal, Hospital Ortopédico Sant'Iago do Outão | 5 | 27,8 |
| Hospital de Ponta Delgada, Açores | 2 | 11,1 |
| Hospital Ortopédico de Sant'Ana, Parede | 2 | 11,1 |
| Centro Hospitalar de Lisboa Ocidental, Hospital de S. Francisco Xavier | 1 | 5,6 |
| Centro Hospitalar do Médio Tejo (Tomar, Abrantes e Torres Novas)) | 1 | 5,6 |
| Hospital Curry Cabral, Lisboa | 1 | 5,6 |
| Hospital Garcia de Orta, Almada | 1 | 5,6 |
| ***Total*** | **18** | **100,0** |

Below is a list of the implants used in elbow arthroplasties, and we should refer that 16 radial head arthroplasties were performed, and 2 arthroplasties of the humeral-ulnar joint.

| ***Company*** | ***Model*** | ***N*** |
|---|---|---|
| Tornier (MBA) | | 11 |
| | MOPYC | 11 |
| Biomet | | 3 |
| | Discovery (úmero-cubital) | 2 |
| | Explorer | 1 |
| Acumed | | 2 |
| | Anatomical Radial Head | 1 |
| | Anatomic Radial Head System | 1 |
| Medcomtech | | 1 |
| | Integra MRH | 1 |
| Wright | | 1 |
| | Swanson | 1 |
| ***Total*** | | **18** |

## Elbow - Revision

In the period from January 1st until December 31st 2013, were recorded 3 revision elbow arthroplasties.

| Table 1 – List of Hospitals where the arthroplasties were performed | | |
|---|---|---|
| | ***N*** | ***%*** |
| Centro Hospitalar de Lisboa Norte, Hospital de Santa Maria | 2 | 66,6 |
| Centro Hospitalar de Entre o Douro e Vouga (Santa Maria da Feira e S. João da Madeira) | 1 | 33,3 |
| ***Total*** | **3** | **100,0** |

The following table shows the implants used in the revision elbow arthroplasties, registered between January 1st and December 31st 2013.

In one of the cases no implant was inserted, in another case only the humeral component was replaced and in the other case it was a revision of the humeral and the ulnar components.

| ***Company*** | ***Model*** | ***N*** |
|---|---|---|
| Implantcast (MBA) | | 1 |
| | Mutars (Humerus and ulna) | 1 |
| Biomet | | 1 |
| | Discovery (humerus) | 1 |
| ***Total*** | | **2** |

# Spine - Primary

In the period of January 1st to December 31st 2013 were registered 15 primary spine arthroplasties.

| Table 1 – List of hospitals | | |
|---|---|---|
| | ***N*** | ***%*** |
| Hospital da Cruz Vermelha Portuguesa, Lisboa | 15 | 100,0 |
| *Total* | 15 | 100,0 |

Below, we present the implants used in the spine arthroplasties registered from January 1st until December 31st 2013.

| | | |
|---|---|---|
| ***Company:*** | ***Model:*** | ***N*** |
| Spineart | | 15 |
| | baguera | 15 |
| ***Total*** | | **15** |

## Spine - Revision

In the period covered by this report (January 1st until December 31st 2013) no spine arthroplasties were registered.

****