Data on Endoprosthetic Hip Replacement in Romania, in the Period 2003–2010
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ABSTRACT
Endoprosthetic hip replacement is a reconstructive surgery procedure for the prosthetic replacement of the hip joint components. The aim is to restore the joint mobility and normal function of all periarticular structures that control the joint motion, allowing operated patients to live a normal life. The paper aims to present the situation of endoprosthetic hip replacements in Romania from 2003 to the present, including the number of interventions performed (primary and revision surgery), their costs, the main types of implanted prostheses, the sex distribution of endoprosthetic replacements, the reporting and recording procedures of the interventions performed. All Romanian citizens who have a medical insurance benefit from prostheses free of charge. As the demand for endoprostheses is very high and the allocated funds are insufficient, patients are placed on waiting lists. Part of these, who can no longer wait, pay for their prostheses. There are no separate data on patients paying for their prostheses and those benefiting from them free of charge. The existing data only refer to the total number of endoprosthetic replacements performed.

KEY WORDS National Endoprosthesis Register, endoprosthetic hip replacement, costs

Introduction
An endoprosthesis is a medical device placed inside the body in order to permanently replace a bone, vessel or heart valve segment [1]. The endoprostheses used in orthopedics can be classified according to:
- the replaced joint: hip, knee, shoulder, elbow, spine;
- the replaced joint part: partial or total prosthesis;
- the type of bone fixation: cemented and uncemented, with or without antibiotic.

Endoprosthetic hip replacement is a reconstructive surgery procedure for the prosthetic replacement of the joint components in this area of the body. The aims of endoprosthetic hip replacement are: to alleviate the suffering of the patient through the elimination of symptoms, mainly pain, to restore joint mobility and stability, and finally, to improve the patient’s quality of life.

Considering the fact that the joint under the greatest amount of stress and the most affected by degenerative diseases is the hip, the majority of the prostheses implanted in Romania and worldwide are hip endoprostheses, followed by knee endoprostheses. There are two types of hip prostheses: cemented and uncemented. Uncemented prostheses are fixed directly to the bone, while cemented prostheses are fixed with cement. The latter are indicated for elderly people, because these have a poorer bone quality, which does not allow direct fixation. The disadvantage of a cemented prosthesis is that it is very difficult to change (revise) after it wears out, which is why it is not recommended for young people, who need to have their prostheses replaced several times during the course of life. The price of a cemented prosthesis is lower than that of an uncemented prosthesis: 600–1000 euros compared to 1200–1500 euros.

Although a great number of endoprosthetic replacements are performed in Romania, public information on the number of these interventions, the costs involved, the types of prostheses used is not widely available. We aimed to research this issue based on the literature data, in order to offer a general view on the subject.

Material and Methods
In order to have an accurate image of the situation of endoprosthetic replacements in Romania, we studied the literature, using in particular the information provided by the Ministry of Public Health, the National Health Insurance House, the National Endoprosthesis Register and the materials offered by endoprosthesis suppliers.

The exploratory research and the logical analysis of data were used as working methods.

Results and Discussion
In Romania, there is a National Endoprosthesis Program by which the Ministry of Public Health and the National Health Insurance House ensure the funds required for the acquisition of endoprostheses. This program started in 2001, by the Romanian Government Decision No. 561/2001 [2], being initially entitled “Prevention in orthopedics and traumatology; orthopedic prosthetics – adults
and children (PN 20)”. The program led to the creation of the National Endoprosthesis Register, an extremely important document for the recording of all interventions performed in orthopedic services in Romania. In this register, the data regarding the interventions performed are public, but the data on patients are confidential [3]. At present, the National Endoprosthesis Register has records for approximately 55,000 patients with primary and revision hip endoprostheses [3].

The situation of hip endoprostheses from 2003 to the present (1\textsuperscript{st} semester of 2010) is shown in Figures 1–4 [3].

According to the data shown in Figure 1, from 2003 to the present, 55,810 hip endoprostheses were implanted, of which 52,727 primary hip endoprostheses (94.48\%) and 3,083 revision endoprostheses (5.52\%). During 2003–2010, a continuous increase occurred, with a maximum in 2008.

The data of Figure 2 show that in the studied period, the most demanded prostheses were total prostheses (34,925 operations), representing 66.69\% of the total number, followed by Moore prostheses (14,303 operations), 27.31\%, and bipolar prostheses (3,145 operations), representing only 6\% of the total number. In the evolution in time, during the eight years, an annual increase in the number of total hip endoprostheses, a slight decrease in the number of Moore prosthesis, and a relatively constant number of bipolar prostheses can be seen.

Sex distribution (Figure 3) indicates a clearly higher number of endoprosthetic replacement cases in the female sex (59\%), compared to the male sex (41\%), this percentage being relatively constant over the researched period.

Figure 4 shows that in the period 2003–2010, of a total number of 34,925 implanted hip prostheses, 23,371 were total cemented prostheses (66.91\%), 10,793 total uncemented prostheses (30.90\%), and 762 were hybrid or reversed hybrid prostheses (2.18\%). The evolution in time shows a constant increase in the number of total uncemented prostheses (from 28\% in 2003, to 46.43\% in 2009), and relatively constant numbers for the other categories: total cemented and hybrid prostheses.

The National Endoprosthesis Register surveys the quality of the implanted endoprostheses and detects defective endoprostheses. The information regarding this aspect is included in the forms completed and reported by orthopedists [3]. The interventions are reported to the National Endoprosthesis Register by the orthopedic services in the country based on two types of forms:

1. Type 0/1 form, which is sent monthly and includes information on the number of endoprosthetic procedures performed, the types of
prostheses used, the average costs regarding endoprosthetic replacement, the treated pathology, as well as the efficiency indicators established by the Ministry of Public Health and the National Health Insurance House. This form does not include information regarding hospitalization, medication and cement [4].

2. Individual patient forms type 2a (primary implant), 3a (revision implant), which are reported after each intervention and contain information on the patient and the type of implanted or revised prosthesis [5–6].

All Romanian citizens who have a medical insurance benefit from prostheses free of charge. The demand is very high and the funds allocated to endoprostheses are not sufficient to cover all the annual demands, so that when these funds are exhausted, patients have two possibilities: to join the waiting lists or to pay for their endoprostheses.

There are no data available as public information from official statistical records regarding the number of patients placed on waiting lists or the number of patients paying for their endoprostheses from their own resources.

The only data available from the official normative documents are those published by the legal regulations regarding national health programs, among which the National Endoprosthesis Program occupies an important place.

The data shown in Figures 5–7 are information collected from the Romanian Official Monitor regarding the development of national health programs in the period 2003–2010 [7–14].

From Figure 5 it can be seen that the sums allocated to the National Endoprosthesis Program constantly increased during the first six years of this program, being two times higher in 2008 compared to 2003. This increase was influenced by several factors, such as the increasing number of specialists in endoprosthetic replacement, of endoprosthetic techniques, as well as of patients with an indication for this type of intervention. Starting with 2008, in the context of the economic crisis, these funds began to diminish.

The number of patients included in the National Endoprosthesis Program, as shown in Figure 6, constantly increased until 2008, being approximately five times higher in 2008 compared to 2003.

Based on the indicators reported as part of the National Endoprosthesis Program, the calculation of a realistic mean cost per endoprostheses patient was possible, and as shown in Figure 7, this was significantly reduced, from 1711 euros in 2003 to 700 euros in 2010.

Prostheses are acquired by hospitals following auctions. The quality of the acquired prostheses is decided by the hospital, depending on the funds allocated as part of the health program. In Romania, no endoprostheses are manufactured. These are imported from important prosthesis manufacturers in Europe and USA. A hip prosthesis is formed by a cotyloid component that is fixed to the pelvis and is termed cup, another component that is fixed to the femur and is termed stem (tail), and a motion component, the spherical head. The spherical head is usually made of ceramic material, the stem is made of metal or titanium-based alloys (e.g., Elite, Exeter, Filler, TTH, UTAA, etc.), and the cup is made of special polyethylene (Azur, Swing, Apogee, Igloo, etc.), metal or alloys (titanium). The highest performance, but also most
expensive, are endoprostheses entirely made of alloys with a ceramic head. They have a longer durability (up to 25 years), according to manufacturers, and are more stable. Prostheses can be cemented or uncemented. Uncemented prostheses are intended for young patients, while cemented prostheses, for older people. In the case of cemented prostheses, orthopedic cement is used for fixation, with or without antibiotic (e.g. gentamycin). Manufacturers make efforts to produce effective, solid and long lasting prostheses, with a component design reproducing as close as possible the joint architecture.

According to the data provided by the National Endoprosthesis Register, in Romania, of the 134 hospitals recorded, only 71 perform endoprosthetic hip replacement procedures [15].

Conclusions

1. The paper presents the situation of endoprosthetic hip replacements performed in Romania, in the period 2003–2010 (1st semester).

2. In Romania, endoprosthetic hip replacements are performed as part of the National Endoprosthesis Program, all interventions being recorded in the National Endoprosthesis Register. Citizens who have a medical insurance benefit from prostheses free of charge. However, because funds prove to be insufficient, patients are placed on waiting lists. Patients also have the possibility to pay for their prostheses.

3. From 2003 to 2010 (1st semester), 55 810 hip prostheses were implanted, 94.5% being primary hip endoprostheses and only 5.5% revision endoprostheses.

4. The sex distribution of hip endoprostheses is clearly in favor of women (59%), compared to men (41%).

5. Although the number of cemented prostheses is still greater than that of uncemented prostheses, the number of uncemented prostheses is continuously increasing, so that the number of the two types of prostheses will soon be equal.

6. The sums allocated to the National Endoprosthesis Program doubled in 2008 compared to 2003, and the number of operated patients increased five times. This became possible due to a more than 50% reduction of the costs of an endoprosthesis patient compared to 2003, through an increase in the number of specialists in endoprosthetic replacement, an improvement in prosthetic techniques and an increased offer of endoprostheses on the Romanian market.

References


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