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Bipolar hip prosthesis with modular revision rod on loss of proximal substance of the femur (about a case)

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Abstract:
Cervical screw scanning is a complication that concerns all means of osteosynthesis of the upper end of the femur, it is generally linked to several factors: poor bone quality, insufficient reduction or bad position of the cervical screw.
We report a case of an intermediate hip replacement prosthesis. It is a case of myeloma of the upper extremity of the femur, the treatment of which was palliative and consisted of an excision with stabilization by a cervico-medullary nailing system. The development was marked by the occurrence of a scan of the cervical screw, hence the decision to undergo surgical revision with removal of the nail and prosthetic replacement with an intermediate hip prosthesis with a REVITAN®modular revision rod (Zimmer Biomet®).
Major losses of bone substance from the proximal end of the femur represent difficult situations without an ideal therapeutic solution. One of the lifesaving solutions is femoral revision prostheses.
The REVITAN® revision system therefore remains an answer that is always suitable for the treatment of bone loss from the proximal end of the femur. The publication of other series will be necessary in order to develop a valid therapeutic protocol for this type of surgery.
Keywords: *cut-out, bipolar hip prosthesis, Revision stem.*

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I. Introduction:

Cervical screw cut-out is a complication that concerns all means of osteosynthesis of the proximal femur, it is generally linked to several factors: poor bone quality, insufficient reduction or bad position of the cervical screw.

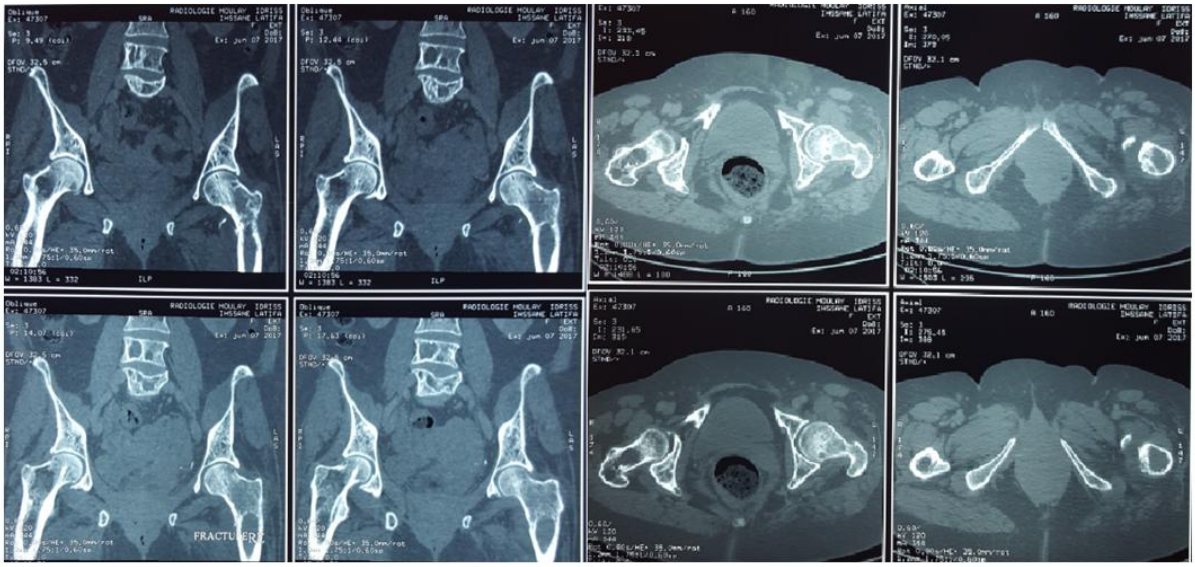
The first reconstructions used massive allografts. Their failure rate was high because these reconstructions were subject to complications from allografts, that is to say infections, bone resorptions, fractures, and non-union between the host and the graft [1,2], another therapeutic alternative is arthroplasty which can either be cuffed in an allograft (called composite reconstruction), or massive like our case [3]. Resistance mechanical implant is superior to composite systems, but this method presents a risk of loosening [4].

The purpose of this work and to report our experience in the case of an intermediate hip prosthesis with revision rod on a scan of the cervical screw on poor quality bone.

II. Patient and observation:

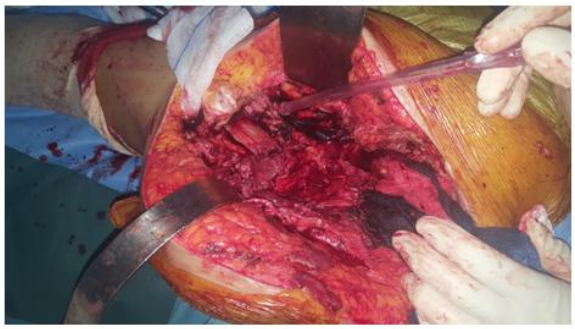
A 54-year-old housewife patient followed for multiple myeloma and undergoing chemotherapy. Following a fall in height, the patient was admitted to the emergency room for pain with total functional impotence of the left lower limb.

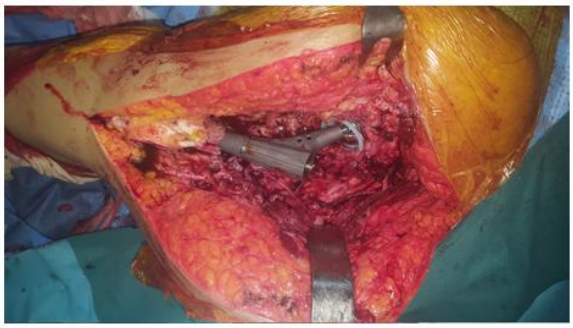
Standard radiograph of the left hip showed a pertrochanteric fracture on pathological bone.CT scan objectifying the same observation and multiple bony gaps in the two iliac wings and the sacrum. (Figure 1).



The patient was admitted to the block, under general anesthesia, she underwent a biopsy with osteosynthesis by a standard cervico-medullary nail (Figure 2). The anatomo-pathological result was in favor of large foci of hemorrhagic suffusions with the presence of plasma cells but the radiological follow-up at 4 months objectified a cut-out of the cervical screw in supero-external from where the indication of a resumption surgical (Figure 3).

The patient underwent removal of the gamma nail, broad excision of the tumor and placement of an intermediate hip prosthesis with a REVITAN® type modular revision rod (Zimmer Biomet®) (Figure 4,5).

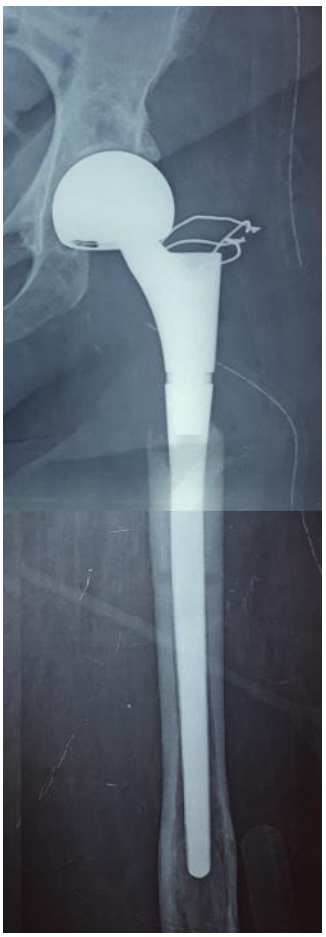




The patient was assessed clinically (satisfaction, Postel and Merle d'Aubigné functional score [PMA] and radiologically (bone – prosthesis interface, pedestal and heterotopic calcifications). Bone reconstruction was assessed using Hoffman's cortical index (IC).

The postoperative protocol includes a prolonged crutch, of which the patient must be informed before the intervention. The patient followed an early rehabilitation protocol with immediate post-operative controls and at each follow-up appointment (at 2 weeks, 6 weeks, 3 months, 6 months and 1 year).

III. Results And Discussion:



The patient presented with a hemorrhagic shock state for which she spent two days in the intensive care unit and then was referred to the trauma-orthopedic service after stabilization of the hemodynamic state.

The post-operative radiological control showed an implant-bone contact surface greater than 3 cm and an IC which found a significant absolute gain of 33% at 8 cm from the prosthetic neck (Figure 6).

The functional result at 6 months post-operative was satisfactory with a PMA score which went from 7 preoperatively to 12 postoperatively. For the literature, Bertani and al. Reported a satisfactory result in his series but the results were nevertheless lower than those of Menedez and al. [5]but both were rated according to the MSTS score of Enneking et al.[6].

Major losses of bone substance from the proximal end of the femur represent difficult situations with several therapeutic solutions on the menu [2,3,7]. Femoral revision prostheses represent a choice among the rescue solutions[8].

The results of the literature at the average follow-up of 5.4 years are encouraging and seem comparable to the therapeutic alternative represented by the composite prosthesis [7].

There was no post-operative infection such as dislocation or early infection. Results from the literature concerning total hip replacement were different [9,10]and found rates of deep infection varying from 3% to 13%, concerning dislocation the rate in the literature was varying from 16 % to 22% depending on the series [11,12].

For the study of the longevity of the prosthesis, we requires a more distant recoil with a wider recruitment of cases.

IV. Conclusion:

Loss of substance from the proximal femur either due to a tumor, traumatic or iatrogenic cause is a usual situation in orthopedics.

The REVITAN® modular revision system therefore remains a solution that is always suitable for the treatment of bone loss from the proximal end of the femur and a combination with other methods such as allograft seems reasonable but remains to be proven by larger studies.

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Contribution of the authors:
- Mohammed Lahsika (Principal author): planning the study, exploitation of the archives, analysis of the results and writing of the manuscript
- BenchekrounSeddikandMninaAyoub: Exploitation of the archives, analysis of the results.
- Mohammed El Idrissi, Abdelhalim El Ibrahimi and Abdelmajid El Mrini: Critical review and final approval

Number of figures: 6 figures
Figure 1: CT of the pelvis
Bone gaps in the two iliac wings and the sacrum, osteolytic lesion of the upper extremity of the left femur with pertrochanteric fracture and detachment of the lesser trochanter.
Figure 2: Standard radiograph of the pelvis facing
Standard gamma nail well anchored with a cervical screw at the junction of the upper third middle third of the femoral neck and an apex point distance (TAD) of 20mm on the front view.
Figure 3: Standard radiograph of the left hip face
Scanning of the cervical screw with breach of the femoral head in superoexternal.
Figure 4: Intraoperative image
Removal of the gamma nail and excision of the reworked bone tissue.
Figure 5: Intraoperative image
Prosthetic replacement with an intermediate hip prosthesis with revision rod.
Figure 6:X-ray of the left hip face
Intermediate prosthesis of the left hip with Revitan® modular revision rod.

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