Segmental diaphyseal cement extraction in septic hip and knee revision surgery

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INTRODUCTION & AIM

Attending to Kurtz’s study of 2007, the projected growth for 2030 in the demand for total hip and knee arthroplasty is 174% and 673% respectively. Being the mean infection rate of 1-2% we can assume the need for septic revision surgery will increase significantly. Whereas complete removal of periprosthetic cement is mandatory for the successful treatment of infected arthroplasties, this step can be very challenging, time consuming and require aggressive techniques.

Segmental cement extraction systems, designed to remove periprosthetic diaphyseal cement avoiding the need for osteotomies, may thus be helpful. We sought to evaluate our results employing this technique and assess if it can be useful in the future.

METHODS

We made a retrospective study analyzing our results for the success of the technique, the method of extraction of the cement plug and the occurrence of complications. The principles, indications and technique are explained throughout figures 1-3.

We must stand out that the goal of this system is to remove the periprosthetic diaphyseal cement, not the cement plug, which may be extracted with the system itself or any other method.

RESULTS

1.- DEMOGRAPHIC DATA: The technique was performed 26 times in 23 patients (6 men and 17 women; 26,09% and 73,91% respectively), 14 (60,87%) of them bearing a hip arthroplasty and 9 (39,13%) a knee arthroplasty. Of the latter, the system was used 6 times in the tibia and 5 in the femur. The mean age was 77,57 yo.

2.- CEMENT REMOVAL was successful in 23 (88,46%) cases. Every time the system failed, salvage procedures could be performed without any additional complications.

3.- PLUG EXTRACTION: It was extracted by endomedular means in 76,92% (20 cases). From the remaining, 5 were removed through osteotomies needed to be performed due to complications and 1 through retrograde percussion.

4.- COMPLICATIONS appeared in 6 cases (23,07%). 3 were due to perforations during the cement plug extraction, 1 secondary to a previous false route and the 2 remaining correspond to system failures. All complications could be solved performing an osteotomy.

CONCLUSIONS

Segmental cement extraction systems have been helpful for us in the treatment of infected hip and knee arthroplasties with a high rate of success. We must highlight the importance of strictly following the system’s surgical technique and that of a correct indication to avoid failure.

Even though there is a significant percentage of complications, only one of them can be considered a direct consequence with added morbidity, being this the leak of the new cement through a preexisting false route. Half of the complications happened during the drilling of the cement plug for its extraction, which is why we strongly recommend the use of fluoroscopic intensifying imaging for this procedure.

Based on our results we think it is an useful, easy and reproducible technique and therefore definitely encourage its use. We have also perceived a minor blood loss, need for blood transfusion and surgical time, but further studies are needed to demonstrate significant differences.