International Clinical and Medical Case Reports Journal
Case Report (ISSN: 2832-5788)

Posterolateral Femoral Episiotomy for Explantation: A Case Report

Scott S Hyland[1*], Daniel T DeGenova[1] and Sanjay Mehta[2]

[1]OhioHealth, Department of Orthopedics, Columbus, OH 43228, United States

[2]OhioHealth Orthopedic Trauma and Reconstructive Surgeons, Grant Medical Center, Columbus, OH 43215, United States

Citation: *Scott S. Hyland, Daniel T. DeGenova, Sanjay Mehta. Posterolateral Femoral Episiotomy for Explantation: A Case Report. Int Clinc Med Case Rep Jour. 2023;2(8):1-6.*

Received Date: 26 February, 2023**; Accepted Date:** 28 February, 2023**; Published Date:** 3 March, 2023

[*]**Corresponding author:** Scott S Hyland, OhioHealth/Doctors Hospital, 5100 West Broad Street, Columbus, OH 43228, United States

ABSTRACT

Introduction: Removal of implants is a complex component of revision arthroplasty. This continues to be an area of interest for arthroplasty surgeons as there continues to be advancement in techniques and instrumentation.

Case Report: A 48-year-old male who presented for revision arthroplasty following an infected total hip replacement. Implant removal was accomplished by femoral episiotomy due to early osteointegration and press fit of the splined tapered modular stem.

Conclusion: Utilization of different methods for implant removal may be considered in arthroplasty. Episiotomy may serve as an effective method when implants have minimal bony in-growth. This serves as a less osseous insulting method for extraction, which may provide benefit for subsequent revision.

Keywords: Osteotomy; Episiotomy; Revision Arthroplasty

INTRODUCTION

Removal of implants in revision hip arthroplasty is a challenging procedure for orthopedic surgeons. Excessive bone loss with the retrieval of the implants from the acetabular or femoral side comes with elevated risk and can ultimately compromise the subsequent reconstruction[1]. There are multiple techniques that may be deployed in apprehending femoral stems in revision arthroplasty. Cortical windows, flexible osteotomes, and extended trochanteric osteotomies (ETO) have been described in the literature to successfully remove femoral implants[2]. This task can come at different levels of difficulty depending on multiple factors including if the stem is cemented, cementless, fully or partially porous coated.

One of the critical points to determine preoperatively is if the stem is osteo-integrated at the bone implant interface (BII). Radiographic imaging may assist in determining if osteolysis or implant loosening is present

which may indicate the implant may be removed without significant bony invasion[3,4]. This case discusses the removal of a modular femoral stem during revision arthroplasty with the use of an episiotomy technique.

CASE DESCRIPTION

This is a 48-year-old male with a past medical history of type 2 diabetes mellitus, depression, hypertension, and hyperlipidemia presenting with an infected right total hip arthroplasty. The patient originally presented to our facility three months prior due to a posterior wall acetabular fracture from a motor vehicle accident. This was treated operatively with open reduction internal fixation (ORIF) with subsequent revision ORIF due to posterior hip dislocation. Clinically and radiographically, persistent hip instability and femoral head fragmentation remained evident leading to severe post-traumatic hip arthritis in his hip. The patient subsequently underwent total hip arthroplasty following hardware removal (Figure 1). Four weeks postoperatively, the patient presentedwith wound dehiscence and a purulent draining deep sinus tract communicating with the implant. Explantation and revision arthroplasty were to be undertaken.

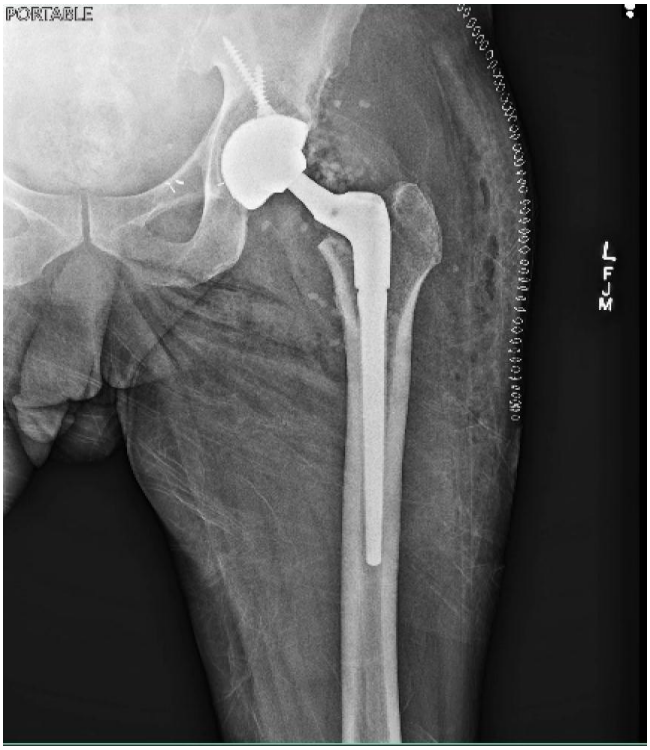

Figure 1: Total hip arthroplasty with intact modular femoral component.

Surgical Procedure

Patient was brought to the operating room and positioned lateral. A standar posterolateral approach was used in the previous interval. The femoral head component (Dual Mobility head; Zimmer Biomet; Warsaw, IN) was removed. Attention was subsequently turned to attempt to remove the proximal body of the implant. The femoral stem consisted of a spline tapered modular stem with proximal body (Arcos 13x150 mm spline tapered stem; 50 mm high offset cone proximal body). Multiple removal techniques were attempted and failed due to the early

osteointegration. Therefore, a single cut femoral osteotomy along the posterolateral cortex approximately 10 cm in length was performed (Figure 2).Following completion of the osteotomy, the patient's prosthesis was successfully removed. The acetabular component and liner (54 mm Biomet shell with multiple screw holes) were then removed in standard fashion.

Figure 2: Saw bones model with the marked line for the location of the posterolateral episiotomy; approximately 10 cm in length just lateral to the linea aspera.

The patient remained with a resection arthroplasty (Girdlestone resection) due to severe femoral-acetabular instability (Figure 3).

Figure 3: Postoperative anteroposterior radiogrpah of the left hip showing successful removal of both acetabular and femoral prosthesis.

Postoperative Course

The patient did well postoperatively and was discharge on postoperative day four with intravenous antibiotics for a Methicillin-resistant Staphylococcus aureus infection. At one month follow up the patient was doing well with minimal pain. The wound was healing, and no further signs of infection were present. Radiographic evaluation demonstrated the episiotomy lucency used for implant removal (Figure 4).

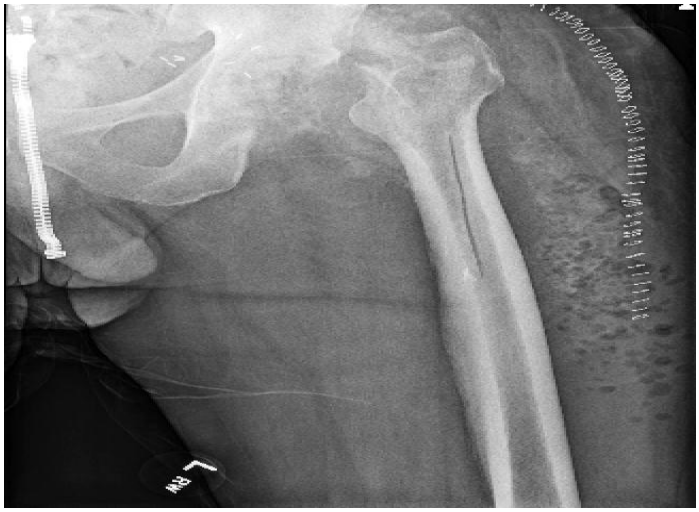

Figure 4: Anteroposterior radiograph of the left femur demonstrating a linear lucency in the subtrochanteric region from the location of femoral episiotomy for implant removal.

DISCUSSION

Removal of solidly fixed implants in arthroplasty during revision is necessary in multiple clinical situations. Depending on the technique chosen to explant the implanted components, the risk of damage to the host bone varies, which can threaten success to the subsequent revision[5,6]. Another important factor in implant removal is the level of osseointegration. Osseointegration is defined as the attachment of lamellar bone to implants without intervening fibrous tissue[7,8]. Literature suggests it takes implants four to 12 weeks for cementless femoral stems to osseointegrate[7,9]. In this specific case, the patient was only four weeks removed from index operation. The implant stillrequired extensive means to remove the implant. Showing early osteointegration.

Bauze et al. describe a posterior longitudinal osteotomy in which they performed this technique on 12 revision arthroplasties[10]. They reported no complications with the use of this technique[10]. This method is ideal for implants with either minimal bony in growth or fibrous on-growth. And if the implant is still difficult to extract, the progression to completing an extended trochanteric osteotomy (ETO) is plausible with the present episiotomy being one of the limbs for the osteotomy. Taylor and Rorabeck also discuss an episiotomy from the anterior femur, which is performed through a lateral approach to the femur[3].

With current techniques, ETO has shown to have good outcomes in both cemented and cementless implants[11,12]; however, the procedure is extensive, invasive, and closure is time consuming. The use of a single episiotomy provides a component of simplicity which can be part of the surgeon's armamentarium without sacrificing the option of transitioning surgical plan to a more extensive osteotomy. Use of this technique also negates the necessity for internal fixation since this provides minimal compromise to the structural integrity of the bone. Further biomechanical and clinical studies utilizing episiotomies in revision arthroplasty are needed for greater understanding for appropriate application. Direct comparisons to other methods of extraction and associated morbidity may provide means to improving outcomes in patients undergoing extensive lower extremity revision arthroplasty.

CONCLUSION

There are different methods for extraction of femoral stem components during revision arthroplasty. Some methods are more osteoinvasive than others. This case presents a method in which a femoral episiotomy was utilized to explant a modular femoral stem. This technique provides alleviation of the press fit making removal more amenable without the need to complete an osteotomy, which requires subsequent fixation and greater insult to osseous integrity.

REFERENCES

1. Masr BA, Mitchell, PA, Duncan CP. Removal of Solidly Fixed Implants during Revision Hip and Knee Arthroplasty. J Am Acad Orthop Surg. 2005;13(1):18-27.
2. Bradbury TL. Extraction Techniques for Well-fixed, Infected Hip Arthroplasty Implants. J Surg Orthop Adv. 2021;30(4):235-242.
3. Taylor JW, Cecil HR. Hip revision arthroplasty. Approach to the femoral side. Clinical Orthop Relat Res. 1999;(369):208-222.

4. Anil U, Singh V, Schwarzkopf R. Diagnosis and Detection of Subtle Aseptic Loosening in Total Hip Arthroplasty. J Arthroplasty. 2022;37(8):1494-1500.
5. Masri BA, Campbell DG, Garbuz DS, Duncan CP. Seven specialized exposures for revision hip and knee replacement. Orthop Clin North Am. 1998;29(2):229-240.
6. Pierson JL, Jasty M, Harris WH. Techniques of extraction of well-fixed cemented and cementless implants in revision total hip arthroplasty. Orthop Rev. 1993;22(8):904-916.
7. Khanuja HS, Vakil JJ, Goddard MS, Mont MA. Cementless Femoral Fixation in Total Hip Arthroplasty. J Bone Joint Surg. 2011;93(5):500-509.
8. Albrektsson T, Brånemark PI, Hansson HA, Lindström J. Osseointegrated titanium implants. Requirements for ensuring a long-lasting, direct bone-to-implant anchorage in man. Acta Orthop Scand. 1981;52(2):155-70.
9. Cook SD, Thomas KA, Haddad RJ. Histologic analysis of retrieved human porous-coated total joint components. Clin Orthop Relat Res. 1988;(234):90-101.
10. Bauze AJ, Charity J, Tsiridis E, Timperley AJ, Gie GA. Posterior longitudinal split osteotomy for femoral component extraction in revision total hip arthroplasty. J Arthroplasty. 2008;23(1):86-89.
11. Paprosky WG, Weeden SH, Bowling JW. Component removal in revision total hip arthroplasty. Clin Orthop. 2001;393:181-193.
12. Younger TI, Bradford MS, Paprosky WG. Removal of a well-fixed cementless femoral component with an extended proximal femoral osteotomy. Contemp Orthop 1995;30(5):375-380.