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Orthopaedics

USE OF ORTHOPAEDIC FINGER SAW AS A COST EFFECTIVE OPTION FOR FEMORAL NECK RESECTION IN HEMIARTHROPLASTY

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ABSTRACT

Background: Femoral neck preparation without the use of oscillating saw is the challenge.Common implantation errors in hemiarthroplasty includes inadequate length of neck remnant and inadequate calcar seating.

Material and Methods: We retrospectively studied 40 patients of femoral neck fracture undergoing hemiarthoplasty of hip joint between 2015 and 2018 and devided the patients in two group with 20 patients in each group.Femoral neck in group A was resected with bone cutter, bone nibbler and osteotome. Femoral neck with Group B was resected with use of finger saw after marking with electro cautery.

Result: In group A, 3 patients complained of thigh pain and 2 patients complained of hip pain .In group B , only 1 patient complained of persistent hip pain .

Conclusion: Use of Orthopaedic finger saw for femoral neck preparation is the cost effective alternative of Oscillating saw. Femoral neck Preparation with bone nibbler and cutter has high complication rate.

KEYWORDS : Austin Moore prosthesis; hemiarthroplasty; femoral neck resection; orthopaedicfinger saw.

INTRODUCTION:

Hemiarthoplasty of the hip joint is one of the most common orthopaedic operation in elderly age group (1)for fracture neck of femur produced by trivial trauma due to osteoporosis. As the number of hip arthroplasty increased worldwide, the rate of complication also increased. (2,3) For that Freeman described the importance of the femoral neck during hip arthroplastyand concept came during the history of arthroplasty that femoral neck should be the weight bearing structure for prosthesisas it has biomechanical advantage. (4)

Femoral neck fracture represents the major health care problem in elderly age group. Austin Moore hemiarthroplasty is the established modality of operation in elderly patients above 60 years but the procedure is technically demanding with common implantation errors like inadequate length of neck remnant, inadequate calcarseating,incorrect prosthetic head size, intraoperative prosthetic fracture and inadequate proximal metaphyseal fill. (5,6)

Neck resection is the crucial step during hemiarthoplastyof the hip joint which usually needs oscillating saw for smooth cutting of the femoral neck to have adequate seating of collar of the prosthesis to avoid future complications of implant loosening and excessive subsidence of the prosthesis. But the oscillating saw with drill is still a costly instrument (more than few lakhs) hardly available in majority of the setup although the volume of hemiarthoplastyof the hip joint is outnumbered in majority of the centers. Neck preparation is usually done with osteotome, bone nibbler or bone cutter in these centerswhich has risk of fracture or crake in the calcar or loss of remaining neck with subsequent implant failure. With view of such intraoperative implantation error, we studied the use of orthopaedicfinger saw as an cost effective alternative to oscillating saw for the femoral neck resection.

Therefore, a careful planning is necessary to give the best available treatment solution.In elderly age group with associated comorbidities,uncemented Austin Moore prosthesis is a still viable option regarding the shorter duration of surgery and avoiding the cement related complication particularly in Dorr type A and Type B femur.Although the optimal treatment option in these group of patient is still under debate. (7) Poor outcome in cemented or uncementedArthroplasty was observed due to failure in restoration of neck lengh and offset. (8,9,10)

MATERIALAND METHOD:

We retrospectively studied 40patients of femoral neck fracture undergoing hemiarthoplasty of hip joint between 2015 and 2018. Mean age of the patients was 72 years with 65 % female.The mean follows up period was 2.5 years. The patients were divided in two groups A and B, each was having 20 patients. Operation in all patients was done with Mooresapproach. After head removal blunt homan retractor was placed underneath the neck and proximal femur was delivered into the wound, excessive retraction of the sciatic nerve was avoided. Leg was kept flexed, internally rotated and foot facing to the ceiling. Femoral neck in group A was resected with bone cutter, bone nibbler and osteotome.Femoral neck with Group B wasresected with use of finger saw after marking with electro cautery.In most individuals an appropriate level of neck resection lies along a line drawn from a point medially mid-way between the upper margin of the lesser trochanter and inferior aspect of the head, to a point laterally at the base of the neck.

Standard 2 cm calcar was prepared for Austin Moore prosthesis and finally rasping was done and prosthesis reduction was done and procedure was completed. There was crake in calcar in 3 patients and rough finish of prepared neck in 4 patients in group A. There was smooth finish of calcar in all the patients of group B prepared with forthopaedicinger saw with no crake and they underwent. Uncementedhemiarthoplasty of hip joint successfully with proper seating of prosthesis over femoral neck. Patients with having calcar crake were treated with cemented bipolar hip hemiarthoplasty to avoid excessive sinking of uncemented prosthesis.

RESULTS:

In group A, 3 patients complained of thigh pain and 2 patients complained of hip pain .In group B , only 1 patient complained of persistent hip pain . On radiographic investigation, Aseptic femoral loosing was found as the cause for thigh pain. All the patients refused to undergo second surgery due to medical unfitness. There was no infection, periprosthetic fracture and dislocation in follow up.

Figure 1.Orthopaedic finger saw

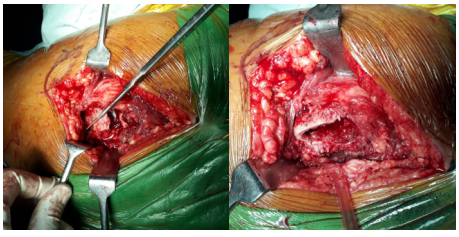

Figure 2,3,.Femoral neck resection

Figure 4 Postoperative Xray of Rt Hip with Hemiarthroplast

DISCUSSION:

Hemiarthoplastyprocedure needs careful preoperative and intraoperative planningto prevent avoidable intraoperative implantation error like overhanging of the prosthesis and inadequate length of neck remnant. (11,12)

Few studies mentioned about 24% failure rate in follow up of hemiarthoplastywhich includes periprostheticfracture and aseptic femoral loosening with thigh pain.(13,14)

Biomechanical studies showed that preserved femoral neck transfer forces developed under weight bearing in more homogenous way than the prosthesis that needed a head and neck resection. It also increase rotation stability and reconstruct the femoral ante version more anatomically .Pipino et al showed that preserved femoral neck provide physiological offset by reducing muscle and soft tissue damage.(15)Use of finger saw for resection after marking with electrocautery gives precision of the femoral neck osteotomy during Austin Moore Hemiarthroplasty and it provides proper seating of collar of prosthesis as inadequate calcar seating is associated with pain and loosening.(16)

CONCLUSION:

Use of Orthopaedic finger saw for femoral neck preparation is the cost effective alternative of Oscillating saw. Femoral neck Preparation with bone nibbler and cutter has high complication rate.

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