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## RESEARCH ARTICLE

### Skin stapler vs sutures in bipolar hemiarthroplasty.

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#### Manuscript Info

#### Abstract

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#### Introduction:-

Hip arthroplasty have gained momentum in the 21<sup>st</sup> century and are one of the numerous elective surgeries done in orthopaedics. they are considered major surgeries in the field of orthopaedics. the indications for doing the procedure have expanded and include: fracture neck femur, arthritis of hip joint, old infection of hip, congenital causes, osteonecrosis .

Due to surgical exposure and the surgical time infection risk is a constant threat .Like every other surgery the risk of infection is there and poses a challenge to orthopaedicians and a dreaded fear among patients.

Operated patients become ambulatory early and lead a normal life. The pain decreases and muscle atrophy is minimum in them. if wound heals without complications then patients are discharged from hospital early and usually the post operative and follow up period becomes uneventful.

In cases with infection the hospital stay is prolonged. i.v antibiotics are continued and the wound needs regular washout and antiseptic dressing. overall it becomes a burden to everyone including hospital , ,doctors , staff and the patient.

Suture fixation is present in surgery since times immemorial and the recent trend of use of skin stapler has decreased surgical time and the infection theoretically.

#### Aim of the study:-

The aim of the present study was to analyze the outcome of bipolar hemiarthroplasty in terms of

- 1.hospital stay
- 2.wound healing

#### Materials & methods:-

This prospective study was conducted in the post graduate department of Orthopedics Government Medical College, Jammu during the period from 1st November 2014 to 31st December 2015.Both male and female patients were included in the study. The selection criterion was based on patients with hip pathology who were planned for bipolar hemiarthroplasty.

**Inclusion criteria:-**

Age 50 to 65 years, fresh fractures, any hip pathology that is an indication of bipolar hemiarthroplasty

**Exclusion criteria**

Multiple injured patients, associated neurovascular injuries, cancer or severely ill patients which increases the operation morbidity, patients below 50 and above 65 years, fracture more than 14 days old, patient with uncontrolled diabetes, malnutrition

All the patients were initially assessed in the emergency section of GMC Jammu. They were given first aid in the form of analgesia, skin traction immobilization, and other resuscitation measures. After selection of the patients for surgery, patients were prepared for elective surgery to be conducted in the elective operation theatre..

**Pre-operative evaluation:-**

Pre-operative evaluation included patients name, age, sex, address, date of injury or pathology, associated chronic illness, date of surgery and date of discharge. Every patient was evaluated for any swelling, bruising & ecchymosis at the operative site and visible deformity of the involved limb. Shortening of the lower limb was measured by a measuring tape.

A careful neurological and vascular examination of the involved limb was done. All the routine investigations like complete blood count & biochemistry were done. Radiographic evaluation by X-ray of the chest, pelvis with both hips ap view and ap / ap in 15 degree internal rotation /lateral view of involved hip was done in every patient. Informed and written consent was taken from the patients.

**Implants:-**

Bipolar prosthesis-all sizes(39-53 mm size)

Bone cement(antibiotic impregnated)

**Operative technique:-**

The patient was positioned in lateral position with the affected side upside. the hip, lower abdomen and upper thigh were draped under all aseptic precautions. Moore's approach was made and soft tissue dissected. Short external rotators are cut and tagged. capsule of joint cut and head, neck localized. Neck is osteotomized, severed and delivered. Trial prosthesis is put to see for the head size and cemented hemiarthroplasty is thus done.

Wound washed and drain kept. Capsule, muscles and soft tissues sutured back in layers with vicryl. The skin closure was done with skin stapler in group 1 and by sutures in group 2. Antiseptic dressing was done.

**Post operative evaluation:-**

Post operatively the limb was elevated. post op x rays and weight bearing was started the next day. Drain removed on 3<sup>rd</sup> day, i.v antibiotics were given twice daily and regular antiseptic dressing was done every alternate day. as per wound condition the pt. Were then discharged from hospital.

**Follow up evaluation:-**

The follow up in the post operative period was done at 3 weeks, 6 weeks, 12 weeks, 6 months and 1 year. in each visit pt. Was assessed clinically for incision site (infection, dehiscence) severity of pain, swelling, tenderness, distal neurovascular status, and superficial / deep infection.

**Results:-**

40 cases of hip pathology were planned for elective bipolar hemiarthroplasty (cemented).

All pt.s were in the age group of 50 -65 yrs. 24(60%) patients were males and the rest were females. 32(80%) patients had operative procedure for fracture neck femur whereas 6 (15%) patients had osteonecrosis as the indication and 2(5%) were operated due to old post septic arthritis sequelae.

Right side (55%) was more frequently involved than left (45%). All patients were operated within 4 days of admission.

average hospital stay was 7.2 days in stapler group and 6.1 days in suture group. mean operative time was 50 minutes including wound closure except the skin layer.

Time taken for skin stapler application was 2 minutes whereas for sutures was 10 minutes. there were 3 cases of superficial infection in stapler group and 1 in suture group and 2 cases of deep infection in stapler group and 1 case of deep infection in suture group.

Pt.s with superficial infection were given i.v antibiotics for an extended period with daily dressing and the infection resolved in all of them.

In Pt.s with deep infection swabs for culture were taken and pt.s again were taken to operation theatre and sutures were removed and wound thoroughly washed with hydrogen peroxide and closed. i.v antibiotics and dressing done. in all of them wound healed and those pt.s were then discharged.

**Discussion:-**

Our study included 40 patients of hip pathology divided in 2 groups in which bipolar hemiarthroplasty was done and skin closure done with skin stapler in 1 group and sutures were used in the other group.

Operative time was more in patients with sutures for skin closure but had a lesser incidence of infection both superficial and deep and thus the hospital stay was less compared to the stapler group.



Fig 1-bipolar hemiarthroplasty with skin closed with staplers.



Fig 2- Infected wound closed by stapler method.



Fig. 3- superficial infection in a pt. Where sutures were applied.

**Conclusion:-**

The traditional method of closure of skin by sutures is changing its trend towards the use of skin staplers. Bipolar hemiarthroplasty have become a routine but important procedure in centers all over the world. The surgical site infection is a dreaded complication in these patients. Use of skin staplers have definitely succeeded over sutures. This study suggests that there is significant reduction in operative time in patients where skin staplers were used and theoretically should have lower infection rate due to decreased operative time. But this study shows a slightly higher incidence of rate of infection both superficial and deep in patients where staplers were used and had a slightly higher hospital stay. Also in the follow up period stapler removal is more painful than suture removal.

Closure of the wound with skin staples was significantly faster than with suture. There was no significant difference in the length of stay in hospital.

We consider that skin staples are the skin closure of choice for hip and replacements.

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