A Case Report

Non Vascularised Fibular Graft in Neglected Fracture Neck of Femur

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Abstract: Neglected fracture neck of femur is a common presentation in developing countries like India. We report a case of 40 years old male patient which was successfully managed at Government Medical College Patiala. Treatment options vary from arthroplasty, osteotomy to osteosynthesis using various implants and grafting techniques (muscle pedicle, vascularized, and non-vascularized fibula). We performed non vascularized fibular graft with cancellous screw fixation. Patient had a satisfactory bony union without any avascular necrosis of the femoral head. We emphasize that surgical management of fracture neck of femur is a treatment option with Non-vascularized fibular graft especially in younger patients

Keywords: Fracture neck of femur, Non-vascularized fibular graft, cancellous screw

Introduction

Fractures of femoral neck have been notoriously called the unsolved fracture[1] as far as its treatment and results are concerned. These fractures occur in an environment where limited and unprotected blood supply to the femoral head, the intracapsular location of the fracture, strong muscle forces across the hip-joint, flow of synovial fluid and osteoporosis with severe trabecular atrophy of the femoral neck inhibit fracture healing. Non-union and osteonecrosis of the femoral head are the two main complications of this fracture especially if the patient presents late.

In developing countries like India patient with these fractures often present to hospitals late due to poverty, ignorance, and lack of medical facilities. There have been many studies regarding management of neglected neck fractures in young adults. Most aim at preservation of natural femoral head while reconstructive procedures such as arthroplasty are being seen as an easier alternative now a day.

Treatment options for such fractures range from internal fixation alone or in conjugation with either osteotomy or bone grafting (vascularised or nonvascularised). Various internal fixation devices have been used such as cancellous hip screws, dynamic hip screws, 135° angled blade plate, and free fibular struts . Cannulated cancellous screws are the most common form of internal fixation used in such patients. Internal fixation with screws and bone grafting has been used by various authors with varying results. Both vascularised as well as nonvascularised bone grafts have been used. Hip preservation remains the primary aim in young patients and it also allows them to have a healthy lifestyle where they can sit, squat and walk without support.

The advantages of using a fibular bone graft in addition to cannulated screws are prevention of subchondral collapse and it acts as a biological implant .It also can be a source of a channel for revascularization. As it is triangular in shape it provides stability at fracture site. The main aim of the study was to ensure stable painless and mobile hip and to see effect of fibular graft with cancellous hips screws on union and to assess rate of non-union, avascular necrosis and other complications in such cases.

The Case Report

A 40 years old male patient presented to

the out patients department with a history of road traffic accident. Patient had pain in the righthip and was neglected for about 3 months because of his low economic status and comes to our hospital as his activities were restricted due to pain and decreased range of motion. We took a plain radiograph of pelvis including both hips and a lateral view of hip which revealed fracture neck of femur. There was no evidence of avascular changes in the femoral head so patient was planned for non- vascularized free fibular strut graft. Under combined spinal-epidural anaesthesia the fracture was reduced by closed method by Leadbetter technique and affected limb was kept in abduction and internal rotation on fracture table. Reduction was checked under image intensifier in both anteroposterior and lateral views. Proximal femur was exposed by 8–10 cm lateral longitudinal incision. Three guide wires were passed in femoral neck up to subchondral area of femoral head and their length was measured. Two superior screws were inserted and fibular graft was inserted below the superior screw in inverted triangle configuration. A second team did fibular graft harvesting from the ipsilateral side saving operative time. Approximately 7 -8 cm of fibula was taken out leaving its proximal and distal ends. Size of the graft was chosen according to the measured length of guide wire. Reaming for the fibular graft was done with distal end of triple reamer (8 mm) and graft was trimmed and inserted under fluoroscopic control. Then graft was gently hammered. To prevent the displacement of fibular graft laterally a cortical screw was inserted from lateral to medial part of femur so that the cancellous screw passed through fibula and transfixed it. Suction drain was inserted and wound was closed in layers.

Follow-up was done postoperatively at monthly intervals for 3 months and then after an interval of two months by clinical and radiological assessment. Active in bed hip range of motion exercises were allowed from first postoperative week. During the follow-up period partial weight bearing with walker and then with stick was allowed at 6 weeks. Full weight bearing was allowed after 20 weeks after radiological union. The Modified Harris hip score in this patient was found to be 82. Patient was clinico-radiographically followed up. On clinical examination, range of hip movements, pain on weight bearing, limp and leg length discrepancy were assessed. The follow up was for 14 months.

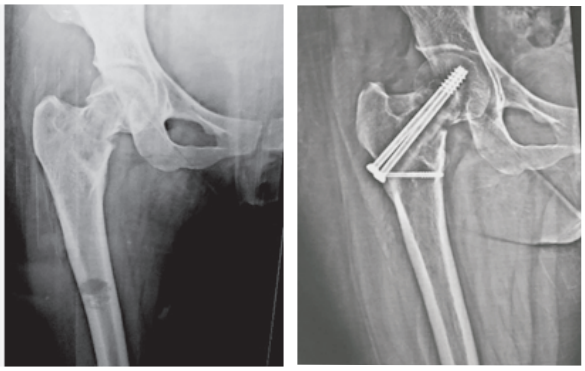

Fig. 1: Pre-operative & Post operative X-ray

Post operative X-ray at 5 months Patient able to squat at 14 months

At the end of 14 months follow up, the result was analyzed according to Modified Harris hip scoring system[2] and they were found to be good.

Discussion:

Treatment of femoral neck of fracture who presented late to orthopedic surgeons is a challenging task. Conservative treatment remained the method of choice until 1931, when Smith-Peterson et al,[3] introduced the triflanged nail. King[4] pioneered the use of fibular strut in combination with SmithPeterson nail in cases of fractures of the neck of the femur. Several osteotomies have been described for old femoral neck fractures by Mc Murray's,[5] Blount,[6] Dickson[1] and Stewart et al.[6] They concluded that realignment osteotomies gives most predictable result in young patients even in the presence of small areas of necrosis by modifying the mechanical environment about the fracture site, i.e., by converting the shearing forces into compressive force. Attempts at head salvage in the young are important. Bone grafting has emerged as a reliable method to treat these fractures with

good functional outcomes in the long-term. A vascularized fibular graft may be superior to a conventional bone graft but it is technically difficult and needs expertise. Economy of time and equipment to microsurgical techniques, which still remains important consideration for an orthopaedic surgeon can't be overlooked. On the contrary, conventional bone grafting may not succeed where the recipient bed is not ideal. Patient age significantly influences the rate of fracture healing with younger patients doing better than the patients in the older age groups. In the current study we had good result in a patient with neglected fracture neck femur with non-vascularized free fibular strut graft with cancellous screw fixation. In this regard we recommend non-vascularized free fibular grafting is an option for young patients.

Conclusion:

Hip preservation with Non-vascularized fibular graft is a simple procedure that should be considered in all young patients as it is useful to bridge bone defects and can provide a biomechanical support and a possibility of revascularization but patient selection is important.

Conflict of Interest: None

References:

1. Dickson J.A. The “unsolved” fracture: a protest against defeatism. J Bone Joint Surg Am. 1953;35:805–22.
2. Harris WH. Traumatic arthritis of the hip after dislocation and acetabular fractures: treatment by mold arthroplasty. An end-result study using a new method of result evaluation. J Bone Joint Surg Am 1969; 51:737–55.
3. Smith-Peterson MN, Cave EF, Vangorder GW. Intracapsular fracture of the neck of femur: Treatment by internal fixation. Arch Surg. 1931; 23: 715.
4. King T. Closed Operation for Intracapsular Fractures of the Neck of the Femur: Final results in recent and old cases. J Bone Joint Surg Br. 1939; 26: 721–48.
5. McMurry TP. Ununited Fractures of the Neck of the Femur. J Bone Joint Surg. 1936; 18: 319.
6. Blount WP. Blade-plate internal fixation for high femoral osteotomies. J Bone Joint Surg. 1943; 25: 319–39.
7. Stewart MJ, Wells RE. Osteotomy and osteotomy combined with bone grafting for nonunion following fractures of the femoral neck. J Bone Joint Surg Am. 1956; 38: 33–48.