CASE REPORT

NEGLECTED FRACTURE NECK OF FEMUR OPERATED WITH NON VASCULARISED FIBULAR GRAFT

S. B. Kamareddy1, Jayaprakash Reddy L2, Vecha Chalmaji3, Nikash P. John4, Karthik R5, Vani Ahuja6

HOW TO CITE THIS ARTICLE:
S. B. Kamareddy, Jayaprakash Reddy L, Vecha Chalmaji, Nikash P. John, Karthik R, Vani Ahuja. "Neglected Fracture Neck of Femur Operated with Non Vascularised Fibular Graft". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 6, November 27; Page: 13617-13620, DOI: 10.14260/jemds/2014/3904

ABSTRACT: Neglected fracture neck of femur is a common presentation in developing countries like India. We report a case of 58 years old male patient which was successfully managed at the institute. Treatment options vary from arthroplasty, osteotomy to osteosynthesis using various implants and grafting techniques (muscle pedicle, vascularized, and non-vascularized fibula). We performed nonvascularized fibular graft with cancellous screw fixation. Patient had a satisfactory bony union without any avascular changes. We emphasize that surgical management of fracture neck of femur is a treatment option with Non-vascularized fibular graft.

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

INTRODUCTION: Hip fracture is the most common serious injury in the elderly population and the most common reason for being admitted to an orthopaedic ward. Delay in the treatment is associated with avascular necrosis. Various methods of treatment options are available, but none of them gives uniformly good results.[1] In younger age groups less than 60 years osteosynthesis is indicated. Various types of osteosynthesis are valgus osteotomy, free or vascularized fibular graft,[2] quadrates femoris muscle pedicle graft,[3] combined osteotomy with fibular graft.[2] Non-vascularized cortical autografts have been used for reconstruction of skeletal defects of long bones since long. The grafts are usually removed from fibula, iliac crest or tibia. Less donor site morbidity associated with removal of fibular graft has popularized its use. Taylor, Miller and Ham, in 1975,[4] were the first to use free vascularized bone graft in tibial defect. Literature[2, 5] supports osteosynthesis using nonvascularized fibular strut graft in both fresh and old femoral neck fracture. We report a case of neglected fracture neck of femur in 58-year old patient with non-vascularized fibular graft.

CASE REPORT: A 58 year old patient met with a high velocity Road traffic accident. Patient had pain in the left hip and neglected for about 2 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 pelvic radiograph which relieved fracture neck of femur. There were no avascular necrosis changes so patient was planned for Non-vascularized free fibular strut graft.

In most of the patients with late presentation neck is absorbed. Sclerosed fracture edges were freshened till bleeding and drill holes were in the neck to ensure thorough decompression of avascular necrosis. Cortical bone graft harvested from fibula is used to reconstruct the neck length and 6.5mm cannulated cancellous screw was inserted parallel to the graft. Final position of screw and graft were checked under image intensifier both in AP and Lateral views and conformed in central position of head and neck of femur. Wound was closed in layers. Patient was encouraged to start active quadriceps exercises of hip and knee joints.
Non-weight bearing ambulation by walker was started by 12th post-operative day. Partial weight bearing was allowed gradually depending on the status of union which assessed radiologically by serial radiographs. Fracture gap started disappearing gradually and clinically patient did not complain of any pain while weight bearing. Full weight bearing was allowed only after full osseous union at 4 months. 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 2.5 years.

Fig. 1: Pre-operative
Fig. 2: Post-operative after 1 year

Fig. 3: clinical photograph after 2 year of follow up with normal range of movements.

At the end of 2.5 year follow up the result were analyzed according to modified Harris hip scoring system and they were found to be excellent.
DISCUSSION: Treatment of un united femoral neck of fracture is a challenging to treating surgeon. Conservative treatment remained the method of choice until 1931, when Smith-Peterson et al.[6] introduced the triflanged nail. King[7] pioneered the use of fibular strut in combination with Smith-Peterson 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,[8] Blount,[9] Dickson[10] and Stewart et al.[11] 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 occasionally impossible. 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.

Infants have the most rapid rate of fracture healing. The rate of healing declines with increasing age up to skeletal maturity, but after completion of skeletal growth, the rate of fracture healing does not appear to decline significantly with increasing age, nor does the risk of non-unions significantly increase, one possible reason for the greater healing potential of children may be increased availability of cells that produce repair tissue: younger cells may differentiate more rapidly from the mesenchymal pool and the pool of the undifferentiated mesenchymal cells may larger in children.

In the current study we showed good results 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: Non-vascularized fibular graft is a simple procedure that is still useful to bridge bone defects, it takes longer duration to achieve union but if used in selected patients can yield good results.

REFERENCES:
1. Deyerle W M. Impacted fixation over resilient multiple pins. Clin Orthop1980; 152: 102-22.
2. Nagi ON, Gautam VK, Marya SK. Treatment of femoral neck fractures with a cancellous screw and fibular graft. J Bone Joint Surg Br. 1986; 68: 387–91.
3. Meyers MH, Harvey JP, Jr, Moore TM. The muscle pedicle bone graft in the treatment of displaced fractures of the femoral neck: Indications, operative technique, and results. Orthop Clin North Am. 1974; 5: 779–92.
4. Enneking WF, Shirley PD. Resection-Arthrodesis for malignant and potentially malignant lesions about knee using an intramedullary rod and local bone grafts. J Bone Joint Surg (Am) 1977; 95A: 223-36.
5. Sandhu HS, Sandhu PS, Kapoor A. Neglected fracture neck of femur: A predictive classification and treatment by osteosynthesis. Clin Orthop Relat Res. 2005; 431: 14–20.
CASE REPORT

6. Smith-Peterson MN, Cave EF, Vangorder GW. Intracapsular fracture of the neck of femur: Treatment by internal fixation. Arch Surg. 1931; 23: 715.
7. 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.
8. Mc Murry TP. Ununited Fractures of the Neck of the Femur. J Bone Joint Surg. 1936; 18: 319.
9. Blount WP. Blade-plate internal fixation for high femoral osteotomies. J Bone Joint Surg. 1943; 25: 319–39.
10. Dickson JA. The unsolved fracture: A protest against defeatism. J Bone Joint Surg Am. 1953; 35: 805–22.
11. 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.

AUTHORS:
1. S. B. Kamareddy
2. Jayaprakash Reddy L
3. Vecha Chalmaji
4. Nikash P. John
5. Karthik R
6. Vani Ahuja

PARTICULARS OF CONTRIBUTORS:
1. Assistant Professor, Department of Orthopaedics, MR Medical College.
2. Post Graduate, Department of Orthopaedics, MR Medical College.
3. Post Graduate, Department of Orthopaedics, MR Medical College.
4. Post Graduate, Department of Orthopaedics, MR Medical College.
5. Post Graduate, Department of Orthopaedics, MR Medical College.
6. Post Graduate, Department of Orthopaedics, MR Medical College.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:
Jayaprakash Reddy L,
Flat No. 15, Gulbarg Residence Apartments,
Badepur Layout, Behind RTO Office,
Sedam Road, Gulbarga-585105,
Karnataka.
Email: jayaprakash6488@gmail.com

Date of Submission: 10/11/2014.
Date of Peer Review: 11/11/2014.
Date of Acceptance: 21/11/2014.
Date of Publishing: 27/11/2014.