

A comparison of proximal femoral nails and dynamic hip screws for femur intertrochanter-IC fractures: A Review

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ABSTRACT:-

The geriatric population frequently has femur inter-trochanteric fractures. The key factors contributing to the increased occurrence of these fractures include urbanization and sedentary lifestyle. Due to osteoporosis, there is a lower prevalence of inter-trochanteric femur fractures in men than in women. The comparison of PFN (vs. DHS) treatment of inter-trochanteric fractures is the objective. To assess the effectiveness of the DH (Dynamic Hip) Screw (VS) PF (Proximal Femoral) Nail for femur inter-trochanteric fracture, we conducted a narrative review. For the purpose of determining which implant is superior, a thorough electronic search of literature was conducted in PUB-MED, Google Scholar, and reference checking. Some studies demonstrate that PF Nail is superior to DH Screw, while other studies show the opposite. Both operations are tried-and-true, absolute, and call for a fair degree of skill. The operating surgeon's preference for a particular approach will ultimately determine the choice.

Keywords: Proximal femoral nail, dynamic hip screw, intertrochanteric femur fracture

INTRODUCTION: -

Lesser trochanter (LT) and larger trochanter (GT) inter-trochanteric fractures (greater trochanter). The leading causes of inter-trochanteric fractures in adolescents are automobile accidents or falls from heights. In the elderly, a simple fall can result in an intertrochanteric fracture. These are made worse in older adults for a variety of reasons, including decreased vision, difficulty performing everyday tasks, fluctuating blood pressure, slow reflexes, and possibly co-occurring musculoskeletal problems. Cummings and Nevitt [1] propose conditions that cause a fall to result in a fracture. a direct hit must land close to the hip, There is a lack of an adequate atmosphere and equilibrium, If the femur strength is less than the residual fall force, less energy was absorbed by the soft tissues like muscles and ligaments around the injured area

Classification

The sub-trochanteric region is the basis for Type I, inter-trochanteric fracture, Type II, trochanteric region with combination, Type III, sub-trochanteric component plus

combination, and Type IV, shaft oblique fracture extending into sub-trochanteric region, according to Boyd and Griffin classification [2].

Dynamic hip screw, DHS

Richards Dynamic Compression Screw, consisting of a part of 12.7 mm that is cannulated threaded distally and an 8.7 mm non-threaded area proximally. Different screw sizes are available, ranging from 50 to 110 mm. Richard screw is traversed by 3.2 mm guide wire. The bone is screwed with a lag screw to create a sliding impression. Through a groove in the Richard screw that prevents rotation, the direction of the key in the barrel is governed. Standard side plates with 2-20 holes for 4.5 mm cortical screws are offered. The most popular plates are 4/5 holed.

Proximal femoral nail, PFN

The hollow tubular PF nail is made of stainless steel, specifically AISI 316 L. The nail's length ranges from 25 to 38 millimeters (mm). The diameter of the proximal part (8 cm) is 17 mm, and the distal part ranges from 9 to 12 mm. For PF nails, there are angulations of 130° to 135° with a 10° anteversion. The lateral curve of the nail is 4°. For fixing lag screws and anti-rotation screws, there are two slots nearby. For the purpose of inhibiting growth in the nail's proximal region, threaded caps are offered. To secure the distal screws, there are two holes present distally. Two proximal screws function as a derotation for static locking and a dynamic fixation, respectively.

METHODOLOGY:-

A thorough electronic search of literature was conducted using reference checking, databases including PUB-MED, and Google Scholar. A narrative review was suited for this study because the types of studies are distinct and the outcomes are measured using several different methodologies. The research and papers that met the inclusion requirements were chosen. articles are present from 2002 to 2021.

RESULTS:-

It is quite difficult for the orthopaedic community to achieve ideal alignment and early function with few problems for intertrochanteric fractures. When compared to surgical fixation, conservative therapy yields poor results. Trochanteric fracture incidence is eight times higher in males over 80 and in women over 50, according to Gallagher et al1980 .'s publication [3]. In the trochanteric region, where senile osteoporosis is most prevalent and the hip joint bears the majority of the body's weight, fractures are more frequent when the calcar atrophies and the trabecular gap weakens. According to previous works, the average age was 76.0 years for Cleave Land and Thompson (1947), 62.5 years for Murray and Frew (1949), and 49 years for Boyd and

Griffin (1949) [4-11]. Scott (1951), 69.7; Evans, 73.3 (1951). Men average 62.6. (&) Females: 74.3; Wade and Campbell: 72.0; Sarmiento: 71.9; Gupta, RC: 51.2. According to David G. Lovelle's research, women and men experience trochanteric fractures in a 3:1 ratio. According to Melton J.L., Ilstrup DM, Riggs BL, et al. [12], there are 11.8 more men than women. According to Helfenste in 1947, osteoporosis is brought on by the activation of osteocalcic, which is caused by post-menopausal hormone shortage. Activity. According to St. Urnier K.M. and Dresing (1995), women experience per- trochanteric fractures 10–15 years earlier than males do. [13]. In their study, HB Boyd and LL Griffin discovered that 75.8% of the 300 patients were female and 24.2% were male. Insufficient local shock absorbers, osteoporosis or osteomalacia causing inadequate strength at the hip are responsible for fracture on trivial falls above the age of 50, and RTA (road traffic accident) for the adolescent group are just a few of the risk factors listed by Cumming and Nevitt in (1994) [1]. According to Horn & Wang, the failure of stress-resisting forces causes fracture during bending or twisting. Direct force on the lateral side of the thigh results in contusion, comminution of the greater trochanter's lateral surface, and valgus deformity [8]. Out of 72 cases studied by K.D. Harrington, coxa vara was present in 4 cases, while limb shortening, with an average length of 1.5 cms, was observed in 56 cases [9]. Leg shortening was evident in 5 unstable fractures out of 124 intertrochanteric fracture cases in Juluru P. Rao's case study [10]. Two of the DHS patients in Dr. G.S. Kulkarni's study who had deep infections had their implants removed. Infected sinuses heal once implants are removed. 15% of cases had a 1-1.5 cm shortening, which was treated by raising the patient's shoes after they had no trouble walking [11,12].

The mean Harris-hip is higher in the PFN group compared to the DHS group, according to a 2018 study by Qidwai et al. [14]. PFN (91.7%) has a good to exceptional outcome when compared to DHS (75%) according to a study by Ravi Shankar et al. from 2015 [15]. With regard to blood loss, post-operative mobilization, the percentage of union, operation time, and Harris-Hip score, various writers demonstrated that PFN is a superior option to DHS. [16-24]

CONCLUSION:-

It is challenging to evaluate and draw conclusions on the superior fixative procedure. Some studies indicate that PF Nail is preferable to DH Screw, while other studies indicate that DH Screw is superior. Both fixative techniques are reliable, tried-and-true, and require high competence. There isn't much of a difference between these 2 procedures' complications. Age, fracture type, and the patient's financial situation all influence the implant that is chosen. Compared to DH Screw, learning the PF Nail technique takes a lot longer for a surgeon to become proficient at. Finally, the decision of whether to utilize a PF nail or DH Screw is left to the operating surgeon. If the operating surgeon uses one of these two, the results will be satisfactory.

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