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Intertrochanteric Fracture Fixation With A Dynamic Comparession Screw, At Shaikh Zayed Hospital, Lahore.

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SUMMARY

During a period of three years, nearly all the intertrochanteric fractures of femur, presenting in our hospital were fixed with a Dynamic Compression Screw. Patients were followed up for a period of six months. The average age of patients was sixty years in men and sixty six years in women. Twenty two percent had associated medical problems. Average hospital stay was eight days. Infection rate was two patients (25%) and that of mortality was one percent.

Intertrochanteric fractures are the most common type of fractures about the hip, especially in the elderly. The morbidity and mortality associated with their closed treatment is very high, so an era of internal fixation to S.P. nail was ushered in; The long list of devices used for the fixation of these fractures is a testimonial, that many did not work well. The requirement of internal fixation being, that the device must stabilize the fracture against deforming forces, exceeding 385 kg /f, until union is achieved. The chart given below shows the implant stress bearing capacity in kg/f in different types of reduction. Although holt nail is the stronger amongst these devices a dynamic compression screw is preferred due to its telescoping ability, thus providing compression at fracture site [1].

	Reduction	Device	
	Jewett	DHS	Holt
Anatomic	285Kg	387Kg	558Kg
Wayne County	285Kg	420Kg	624Kg
Dimon Hughston	331Kg	430Kg	834Kg

The Hip 1978.

Fixation mechanics of intertrochanteric fractures. Herbert Kaufer, Larry S. Matthews, David A. Sonstegard, the hip 1978.

Since D.H.S. fixation of interochanteric hip fractures is still a relatively newer concept, so a study was embarked upon to compare the results of fixation in our unit with those given in literature (DHS = Dynamic Hip Screw or DCS = Dynamic compression Screw).

MATERIAL AND METHODS

During a period of three years i.e. from September 1986 to September 1989, a total of Eighty eight cases were operated upon for intertrochanteric fractures and fixed with a dynamic hip screw. Apart from these, associated illness forbade surgery in two and in six patients a Jewett nail plate was used for echonomic reasons.

The age range was 25-100 years for all the patients. 25-88 Yrs (average age 60 Yrs.) for men and 28-100 Yrs. (average age 66 Yrs.) for women.

Age range chart.

We classified the fracture, primarily following a combination. According to Dimon Hughston classification, we had 46 (52%) two part fractures, 14 (16%) three part fractures and 28 (32%) four part fractures. According to Evans classification, there were 50 (57%) stable and 38 (43%) unstable fractures.

Fracture Types

Dimon Hughston	
2 Part	46 (52%)
3 Part	14 (16%)
4 Part	28(43%)
Evans	
Stable	50 (57%)
Unstable	38 (43%)

Twenty two (25%) percent of the patients had associated medical problems, like hypertension, diabetes, COPD, old myocardial infarcts, malignancy and miscellaneous.

Associated Illness	
Hypertension	5%
Diabetes	4%
Copd	1%
M.i.	4%
Malignancy	2%
Misc.	9%

All the patients admitted were first assessed for surgery and associated medical problems. Anaesthetist and internists were consulted, and if necessary suitable treatment instituted. The patients were not operated on emergency basis and mostly operated upon within forty eight (48) hours after admission in the hospital. Surgery was done by either experienced Orthopaedic Surgeons, or by residents under their supervision. A conventional operating room with ultra violet lamp facility was used. Twenty four (24) patients were operated upon a conventional top operating table, using a modified Watson Jones Exposure, and open reduction and internal fixation was done. Other sixty four (64) patients operated upon a fracture table, in which closed reduction and internal fixation of the fracture was done under image intensifier control. A dynamic hip screw with a four hole, 135o barrel plate was used. The use of a compression screw was left to the discretion of the surgeon. Wounds were closed in layers over suction drains.

All patients were given parentral 1gm of cephalosporines peri-operatively i.e. before making the incision, followed by 500mg of Kefzol 8 hourly for twenty four (24) hours post operatively or till the drains were removed. Patients above fifty (50) years of age were given 150mg soluble aspirin twice a day for deep venous thrombosis prophylaxis.

All the patients were given patient controlled analgesia (PCA) comprising of 100 mg of pathedine in 1 litre of 5% Dextrose in water alongwith Inj., Metachloporamide, run at a rate of 10-15 drops per minute. The patients were advised to vary the rate as per requirement. This was continued for one or two days. Patients were encouraged to sit up in the bed on the morning after operation. Drains were removed mostly by the 2nd day and antibiotics omitted. By the third or fourth day patients were sent for physiotherapy, where range of movement exercises and assisted non-weight bearing ambulation was started. By the sixth post operative day, most of the patients were up and about, non weight or partial weight bearing with the help of a walker frame, and were fit to be sent home. Stitches were removed on the tenth post operative day in the out patient clinic.

Patients were followed in the out patient clinics on a fortnightly basis for three months, and then on a monthly basis for a total of six months, where apart from general physical status assessment, routine roentgenograms in anteroposterior and frog-lateral views were obtained. Decision of early weight bearing was made on individual basis. Young and those with stable fractures were fully weight bearing by the end of tenth week.

To asses our results we followed the assessment criteria used by Kyle, Gustilo and Premer (1979) [Richard F. Kyle, Ramon B. Gustilo, Robert F. Premer. J.B.J.S. 61, A:1979] where they had stabilized 622 intertrochanteric fractures. According to which patients having normal range of movement, minimal limp, no pain and rarely using a cane were classified as excellent result. Patients having a normal range of movement, with a noticeable limp, having occasional mild pain and routinely using a cane were classfied as good result. Patients with a limited range of movement, a noticeable limp, moderately painful hip and using two canes were classified as fair and those who had painful range of motion, were non ambulatory and experienced pain even if the range of motion were graded as poor results.

RESULTS

In this study a period of six months was taken as a sufficient follow up period for fracture healing, or any complication to surface out. Of Eighty eight cases Eighteen cases did not complete the six month follow up and so were excluded from the study. One patient died on the second post operative day because of myocardial infarction, while one died after five months because of a breast malignancy.

Out of sixty eight patients twelve (18%) were graded as excellent. Forty three (63%) were graded as good results. Eight patients (12%) were classified as fair and five (7%) as poor results.

Results		
Excellent	12	18%
Good	43	63%
Fair	08	12%
Poor	05	07%

Complications encountered in this study were consistent with other studies given in literature. The rate of infection was 2%. Four of the patients had a superior cut out of the screw (5%). Four of the patients had to be reported to attain a rigid fixation (4%). Mortality in our series was 1%. In one of our patients proximal femoral shaft fracture was encountered. The fracture was just distal to the fourth screw of the barrel plate (1%).

	Complications	
	No of Patients	%
Infection	02	02% - 2.272%
Cut Out-	04	05% - 4.54%
Redo-	04	04% - 4.54%
Mortality	01	01% - 1.13%
Fracture	01	01% - 1.13%
Varus Deformity	04	04% - 4.54%

For comnparison, a few studies are quoted which show that our results are well within acceptable range.

De Klerk and Ie Bees (1986) conducted a study on 100 patients, having an average age of 74 years. A greater number of these patients had associated medical problems as ccompared to our series. They studied mobilization slightly later i.e. on the 8th day whereas sitting up in bed was started on the 4th post operative day. They had a follow up of 18 months after which 51 patients were about to return to ambulatory status, while 51 had minimal or no pain. They consider this rehabilitation progressive to be on excellent one. In our series, the average age of the patients was less and fewer had associated medical problems, attributing to better results inspite of early mobilization.

	De Klerk And De Beer 1986	Shah And Asad 1989
Average Age	74 Years	62 Years
Associated Illness	62%	25%
Mortality	02%	01%
Sitting Up	4th Day	2nd Day
Walking	8th Day	5th Day
Implant Failure	02%	01%

Bannister and Gibson (1983) reported a study done on 154 patients, who were 65 years or above in age. They started weight bearing (tolerable) on the 3rd post-operative day. Their rate of fixation failure of reoperation was 10% as compared to ours of 03%. The variation probably due to the difference in age group and much earlier weight bearing.

Bannister And Gibson 1983		Shah And Asad 1989
Age	> 65 Years	25-100 Years
Weight Bearing	3rd Day	5th Day
Failed Fixation	10 %	03 %
Reoperation	10 %	05 %

Jacob et al (1976) in his study of 101 cases in which the rate of Joint penetration by the implant was 06% as compared to 03% in our series. Loss of fixation, aseptic necrosis joint penetration and mal and non union were seen in 06% as a whole.

Jacobs et al 1076		Shah and Asad 1989
Joint Penetration	03 %	03 %
Loss Of Fixation	06 %	03 %

In view of the above stated studies we are of an opinion that using the DHS is technically only slightly more difficult and taking a few minutes longer to implant. A review of literature indicates, that the theoretical advantages of the Dynamic Compression Screw are in fact real, and our experience in this institute shows that our results are well within acceptable range.

In the fracture a better device may be developed, but today the sliding compression screw is the best device avaiable for stabilization of intertrochanteric fractures(Deptt.-1980).

REFERENCES

1. A.J. De Klerk. J.F. de Beer. (Stellen bosch) :A review of 100 interochanteric fractures treated with the sliding hip screw. J.B.J.S. 68B-506 1986.
2. G.C.Bannister, A.G.F. Gibson (Bristal) :Jewwtt nail-plate as A.O. dynamic hip screw for trochanteric fractures :A rendomised prospective controlled trial. J.B.J.S. 65B-218 1983.
3. Herbert Kaufer, Larry S.Matthew. David A. Sonstegrad: Fixation Mechanics of intertrochanteric fractures: the hip 1978.

4. Richard F. Kyel, Ramon B. Gustilo, Robert F. Premer: Analysis of six hundred and twenty two intertrochanteric hip fractures; J.B.J.S. 61A-216-221 1979.
5. R.R. Jacobs, James Armstrong, J. Whitaker, T. Pazell, and O. Mc Clain: A Biomechinical and clinical study on compression screw and Nail plate in the treatment of intertrochanteric hip fractures. J.B.J.S. 58A-732 1976.
6. Samuel H. Doppett, : The Sliding Compression Screw Today best answer for stabilization of intertrochanteric Hip fracturs. Ortho. Clin. North. Am: 507-523 July, 1980.