

Calcar-Replacement Hemiarthroplasty in Unstable Intertrochanteric Fracture of the Femur

Essay

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العلاج الجراحي للكسور الغير مستقرة
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CONTENTS

	<i>Page</i>
Introduction and Aim of the Work	1
Anatomical considerations.	4
Biomechanical considerations.	14
Designs and materials.	23
Indications of calcar replacement hemiarthroplasty.	37
Operative techniques.....	49
Complications.	54
Results and conclusion.....	61
Summary.	72
References.	74
Arabic summary	--

List of Figures

Fig.	Title	Page
1	Section of the femoral head showing the coarse trabeculation at right angle to the articular surface ending in the epiphyseal scar.	5
2	Coronal section of anatomical proximal femoral specimen reveals: A. trabecular mushroom of femoral head; B. primary compressive strut; C. pressure buttress of the medial femoral neck; D. Ward's triangle.	6
3	Proximal femoral head/neck specimen after all soft cancellous bone is removed reveals:A. trabecular mushroom; B. medial femoral neck cortex.	7
4	Anterior-posterior view of dissected anatomical specimen demonstrates: A. primary compressive strut; B. pressure buttress of the medial femoral neck; C. calcar femorale.	8
5	Lateral view of dissected anatomical specimen reveals: A. pressure buttress of the medial femoral neck; B. Calcar femorale.	9
6	Fine-grained typical lateral radiograph of a cadaver femoral neck specimen: A. Specimen slightly externally rotated; B. Specimen slightly internally rotated; Posterior aspect (D), anterior aspect (V). The course of the calcar femorale (1.) in relation to the lesser trochanter (2).	9
7	Calcar femoral as seen on the original figures by Harty (1957). a. Original drawing of the cutting plane (M); b. Personal schema of the same plane.	10
8	Computed CT slices of femur specimen.	11
9	Three dimensional reconstruction of cortical bone in the lesser trochanteric area.	11
10	The arching lamellae on the inner aspect of the femoral diaphysis.	13
11	Diagrammatic representation of the canal flare index.	13

List of Figures (Cont.)

Fig.	Title	Page
12	The eccentric offset of the bipolar head.	15
13	Bipolar cups.	17
14	While standing, center of gravity is posterior to axis of hip joint.	21
15	Forces producing torsion of stem. Forces acting on hip in coronal plane (A) tend to deflect stem medially, and forces acting in sagittal plane (B), especially with hip flexed or when lifting, tend to deflect stem posteriorly.	21
16	A.comminuted fracture in 81-year old patient. B. replacement with leinbach prosthesis.	23
17	The leinbach prosthesis (left) and the head-neck prosthesis (right) with the outer head removed.	24
18	Calcar replacement titanium femoral prosthesis with bolt-and-plate device.	25
19	A close-up view of the proximal portion of the Mallory-Head Calcar Replacement, showing the platform element.	26
20	Mallory-Head Calcar Replacement Prosthesis (Biomet) showing both the modular version (left) and the monoblock version (right).	26
21	Prosthesis Design for Optimal Load Transfer.	27
22	The prosthesis has a modular design to address proximal-distal mismatches. The proximal options are depicted.	27
23	Representatives of the monobloc and modular calcar replacement system.	28
24	A. Anteroposterior radiograph showing an unstable intertrochanteric fracture of the left hip in an eighty-five-year-old woman who fell at home. B. Radiograph made thirty-four months after a longstem calcar-replacement hemiarthroplasty, showing a well-fixed prosthesis.	29

List of Figures (Cont.)

Fig.	Title	Page
25	(CRC) Hip Prosthesis in intertrochanteric fracture.	31
26	The system includes four body sizes and a variety of stem lengths (170mm - 300mm).	32
27	Features of (CRC) Hip Prosthesis.	33
28	Minimized lateral shoulder.	33
29	Medial shape Calcar Blocks Available 10, 20, 30 mm heights.	34
30	Two screw identical to Modular Calcar stem.	35
31	CRC - Flat AP Stem and Tapered distal tip.	36
32	Unstable comminuted intertrchanteric femoral fracture.	37
33	Anteroposterior radiograph of the hip of a seventy-seven-year-old woman with nonunion and failed fixation of an intertrochanteric fracture.	40
34	(A) Unstable trochanteric fracture stabilized with the SHS. (B) The same fracture as in A. Excessive medial and vertical displacement of the fracture with subsequent failure of the fixation.	42
35	A typical reverse obliquity fracture with the major fracture line running from distal-lateral to proximal-medial.	43
36	A.Compression across the fracture when SHS is used for standard intertrochanteric fractures. B.Distrraction across the fracture when SHS is used for reverse obliquity fractures.	45
37	A. Failed fixation with medialization of the distal fragment, loosening of the lag screw in the proximal fragment, and fatigue failure of the distal screw. B. A healed fracture with residual deformity of the proximal part of the femur.	45

List of Figures (Cont.)

Fig.	Title	Page
38	A.Calcar resection guide B. Transverse cut C. Longitudinal cut in line with long axis of the femur and matching the femur antiversion.	52
39	The image shows how to calculate the acetabular cartilage degeneration.	57
40	Loss of ambulatory grades of patients in the current series was compared with data from Laskin et al.	66

المخلص العربي

إن كسور الجزء العلوى لعظمة الفخذ فى كبار السن أكثر شيوعا بين النساء عن الرجال. كذلك الكسور الغير المستقرة لمنطقة ما حول المدور تمثل احد أهم أسباب المضاعفات للمرضى كبار السن. لذا فان أهم شئ فى خطة علاج هذا الكسر هو محاولة الرجوع بالمريض إلى نشاط ما قبل الإصابة فى أسرع وقت ممكن, كذلك محاولة منع حدوث مضاعفات تلزم عمل عمليات جراحية أخرى.

على الرغم من أن القاعدة العامة فى علاج الكسور هى المحافظة على العظام الطبيعية للمريض بقدر الامكان, لكن فى حالات وهن العظام عند كبار السن المصابون بالكسور غير المستقرة لمنطقة ما حول المدور يكون تطبيق القاعدة العامة لاتساعدهم على الحركة و المشى فى وقت مناسب. بسبب وهن العظام و عدم تماسكها مع المسامير و الشرائح مما يؤدي إلى مضاعفات كثيرة عند تثبيت هذا النوع من الكسور.

لذا فانه لا يوجد طريقة للتثبيت الداخلى لهذا النوع من الكسور يمكن أن تسمح للمريض بالحركة و المشى بعد وقت قصير من العملية. كذلك المشى مع التحميل الجزئى فى المرضى كبار السن غالبا ما يتحول إلى مشى مع تحميل كلى مما يؤدي إلى مضاعفات وفشل فى التثبيت.

للسماح بالتحميل المبكر بعد العملية و لتجنب حدوث إنضغاط فى مكان الكسر ينصح بعض الجراحين بالمفاصل الصناعية خاصة تلك التي تتميز بوجود الجزء التعويضي للمدور الأصغر أو لرأس وعنق هذه الأنواع من المفاصل وذلك لعلاج الكسور الغير المستقرة لمنطقة ما حول المدور.

اختيار المريض المناسب يعد هام جدا بحيث يكون له الخصائص الآتية:

- الكسور الغير المستقرة لمنطقة ما حول المدور

• كبار السن

• وهن العظام

وبالتالي النصف مفصل الصناعي ذو الجزء التعويضي للمدور الأصغر يجب أن يعتبر أحد طرق علاج الكسور الغير المستقرة لمنطقة ما حول المدور في كبار السن.

List of Abbreviations

AO/ASIF : Association for study internal fixation

AP : Anteroposterior

BHR	:	Bipolar hip replacement
Cont.	:	Continued
CRC	:	Cemented revision calcar
DHS	:	Dynamic hip screw
DVT	:	Deep venous thrombosis
GN	:	Gamma nail
IF	:	Internal fixation
IT	:	Intertrochanteric
ML	:	Millimeter
OTA	:	Orthopedic trauma association
PFN	:	Proximal femoral nail
ROM	:	Range of motion
SHS	:	Sliding hip screw
THA	:	Total hip arthroplasty
THR	:	Total hip replacement

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INTRODUCTION

Hip fractures are common in advanced ages in which the bone density frequently is reduced. Such fractures have varying degrees of impacts on the physical and social lives of patients. Although patient care and surgical techniques showed improvements compared to the past in recent years, treatment of patients with hip fractures may result in worse than it is expected.⁽¹⁾

Proximal femoral fractures predominantly occur as low energy injuries in elderly patients, and their number is increasing.⁽²⁾ Unstable intertrochanteric fractures in elderly constitute one of the major disabling morbidity in this age group.⁽³⁾ The age incidence of these fractures varies according to sex and geographical distribution. The average age is 75 years or more, 10 years older than patients sustaining femoral neck fractures.⁽⁴⁾

People in this age group usually have other systemic diseases such as diabetes, liver and cardiovascular diseases. The impact of these diseases cause rapid deterioration of the general condition of those patients especially in the bed ridden condition. The main goals of the treatment of these patients are to restore the pre-fracture activity status of the patients, to allow early full weight bearing, and to try to avoid possible second operation to correct one of the complications of the first one.⁽⁵⁾ At the December 2005 meeting of the AAOS Evidence Based Practice Committee, it was reported that 18–33% of hip fracture patients die within 1 year and 25–75% do not gain prefracture function.⁽⁶⁾

As a general rule, preservation of the natural bones of the patient is the ideal aim. In osteoporotic elderly patients with unstable intertrochanteric fracture this ideal aim will not help the patient to restore back his activity if internal fixation was

done. Weak purchase of the internal fixation device due to osteoporosis and comminution of the fracture will increase the incidence of failure of internal fixation. In elderly patients even if they are in good general health, they can't be mobilized without some weight being borne on the involved limb. There is no internal fixation device that allows early full weight bearing of patient with severe osteoporosis and marked comminution at the fracture site. Partial weight bearing is very difficult to be controlled by elderly patients, so they may shift to full weight bearing on the operated limb causing metal or bone failure. In cases of failure of internal fixation the usual solution will be hip arthroplasty.⁽³⁾

Excessive collapse, loss of fixation, and cut-out of the lag screw resulting in poor function remain problems associated with internal fixation of unstable intertrochanteric fractures in elderly patients with osteoporotic bone. To allow earlier postoperative weight-bearing and to avoid excessive collapse at the fracture site, some surgeons have recommended prosthetic replacement, especially with a calcar-replacement type of prosthesis, for the treatment of unstable intertrochanteric fractures. Recently, Rodop et al. reported on fifty-four elderly patients who had been treated with a bipolar Leinbach hemiprosthesis (Protek; Sulzer Orthopedics, Baar, Switzerland). A good to excellent result, as assessed with the Harris hip-scoring system, was reported in 80% of the patients. There were no dislocations or cases of stem loosening.⁽⁷⁾

Aim of the work

The aim of this essay is to review the literature regarding indications, designs, operative techniques and results of calcar-replacement hemiarthroplasty in unstable intertrochanteric fractures of the femur.

Anatomical Consideration

The proximal end of the femur consists of intertrochanteric region formed by greater and lesser trochanters, femoral head and neck. The intertrochanteric region of the hip, consisting of the area between the greater and lesser trochanters, represents a zone of transition from the femoral neck to the femoral shaft. The trochanters are prominent processes which afford leverage to the muscles that rotate the thigh on its axis. They are two in number, the greater and the lesser. ⁽⁸⁾

Internal structure of the proximal end of the femur:

The upper end of the femur is perfectly adapted to the type and magnitude of the physiological stress to which it is subjected through both the distribution of material and the architecture of cancellous bone. The greatest amount of bony tissue is found in those parts where the greatest compressive' and tensile stresses are found, as in the medial and lateral cortices. In regions where the stress is minimal the bony tissue forms the region of Ward's triangle. ⁽⁹⁾

The trabecular patterns differ according to the level of study.

I- **The femoral head:** (Fig. 1)

The trabeculae of the femoral head are closely woven and arranged perpendicular to the articular surface. ⁽⁹⁾