TRANSDELTOID VERSUS DELTOPECTORAL APPROACH IN THE INTERNAL FIXATION OF PROXIMAL HUMERAL FRACTURES

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INTRODUCTION

Proximal humeral fractures are usually due to osteoporosis in old aged population after exposure to low energy trauma. They are also seen in young adults due to high energy trauma.

The optimal treatment for proximal humeral fractures is controversial. It includes conservative treatment for minimally displaced fractures; open reduction and internal fixation; minimally invasive percutaneous plate osteosynthesis; and shoulder arthroplasty.

It is very important to choose the convenient and the best surgical approach for fixation of proximal fractures of the humerus.

Transdeltoid lateral approach offers good advantage of minimal soft tissue dissection and a low risk of humeral head avascular necrosis and short operative time.

Deltopectoral approach gives a better access to the articular surface, with better handling of fracture fragments in multifragmentary and intra articular fracture types.

AIM OF THE WORK

The aim of our study was to compare the results of transdeltoid lateral approach versus deltopectoral approach in open reduction and internal fixation of proximal humeral fractures.

PATIENTS AND METHODS

- We prorospectively compared the results of open reduction and internal fixation through transdeltoid versus deltopectoral approach of 40 patients with two or more parts fracture of proximal humerus.
- The age of the patients ranged between 40- 60 years old.
- They were divided randomly into two equal groups: group A; transdeltoid and group B; deltopectoral.
- In the transdeltoid group, thirteen patients (65%) had two part fracture, five patients (25%) had three part fracture, and two patients (10%) had four part fracture.
- In the deltopectoral group, nine patients (45%) had two part fracture, eight patients (40%) had three part fracture, and three patients (15%) had four part fracture.
- All patients were assessed after 6 months according to UCLA (university of California and los angels) shoulder rating scale based on assessment of a number of individual subjective and objective parameters.

RESULTS

1) Total score analysis:
For the transdeltoid group, twelve patients (60%) have an excellent score, six patients (30%) have a good score. For the deltopectoral group, twelve patients (60%) have an excellent score, four patients (20%) have a good score.

Table 1: Comparison between the two studied groups according to final score

Final score	Group A n = 20)		Group B n = 20)		Total n = 40)		χ^2	^{MC}p
	No.	%	No.	%	No.	%		
Poor	1	5.0	1	5.0	2	5.0	1.599	0.782
Fair	1	5.0	3	15.0	4	10.0		
Good	6	30.0	4	20.0	10	25.0		
Excellent	12	60.0	12	60.0	24	60.0		

χ^2: Chi Square test, MC: Monte Carlo test
p: p value for comparing between **Group A and B**
Group A: Transdeltoid lateral approach., **Group B:** Deltopectoral approach
Excellent = 34-35 points, Good = 28-33 points, Fair = 21-27 points, Poor = 0-20 points

2) Operative time:
For the transdeltoid group, the mean of the operative time was 83.25±11.73 ranging from 60–100 minute.
For the deltopectoral group, the mean of the operative time was 115.0±12.25 ranging from 95–130 minute.

Table 2: Comparison between the two studied groups according to operative time

Operative time (min)	Group A (n = 20)	Group B (n = 20)	Total (n = 40)	T	P
Min. – Max.	60.0 – 100.0	95.0 – 130.0	60.0 - 130.0	8.373*	<0.001*
Mean ± SD.	83.25 ± 11.73	115.0 ± 12.25	99.13 ± 19.96		
Median IQR)	85.0 (75 – 92.5)	117.50 (105 – 127.5)	97.5 (105 – 128)		

t: Student t-test
p: p value for comparing between **Group A and B**
*: Statistically significant at $p \leq 0.05$
IQR: **Inter quartile range**, SD: **Standard deviation**
Group A: Transdeltoid lateral approach., **Group B:** Deltopectoral approach.

CONCLUSION

- The transdeltoid approach offers some ease in the greater tuberosity reduction, application of the plate over the lateral surface of the proximal humerus, and shorter operative time.
- There is a risk of iatrogenic axillary nerve injury with the transdeltoid approach which is avoidable if the surgeon is familiar to the approach.