

2-Octyl & N-Butyl Cyanoacrylate An Adjunct To Fracture Stabilization In Internal Fixation Of Olecranon Fractures

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INTRODUCTION:

Comminuted & oblique olecranon fractures are common intraarticular injuries that require anatomical reduction & stable fixation which is also provided by Plate Fixation (PF). Fracture reduction using cyanoacrylate glue may offer a viable alternative for constructing the fragments without using K-wires which may harm fragile bones. The aim of the study is to pinpoint the tremendous effect of biological adhesive in accelerating orthopedic surgery.

METHODS:

42 patients underwent olecranon surgery in Hospital Putrajaya between 2014-2017 were reviewed retrospectively. Standardized open reduction & plate fixation with aid of K-wires for initial stabilization were done for 20 patients. In the experimental group, 22 patients underwent plate fixation with 2-octyl & N-butyl cyanoacrylate glue used to stabilize fragments prior plating. The duration of surgery, union time & joint stiffness were analyzed for main assessment criteria. The prevalence of other factors such as VAS and post op hospital stay were also reviewed.

RESULTS:

There is no significant difference between mean age, union time, VAS and post op hospital stay between control and intervention group. There is significant mean difference in duration of OT time between PF with K-wire and PF with glue group, with p value < 0.001. PF with K-wire had a significantly longer mean OT time compared to glue.

Table 1: Analysis using Independent t-test

Variables	Group	Mean	Std.Deviation	P Value
Age	K-wire	38.35	13.64	0.214
	Glue	32.68	15.32	
Duration of surgery (min)	K-wire	117.4	9.577	< 0.001
	Glue	82.14	7.930	

Union Time (weeks)	K-wire	9.25	3.275	0.111
	Glue	7.82	2.383	
Post op hospital stay (days)	K-wire	3.05	0.826	0.985
	Glue	3.05	0.722	
VAS(visual analogue scale)	K-wire	2.30	0.801	0.308
	Glue	2.55	0.739	

Table 2

	Group		Total
	K-wire	Glue	
Joint Present	3	1	4
Stiffness Absent	17	21	38
Total	20	22	42

Using Chi Square Test *p value = 0.249, thus there is no significant association between joint stiffness and treatment group.

DISCUSSIONS:

The study shows a significant shorter surgery time in olecranon fixation aided with adhesive. Joint mobility were also not affected by cyanoacrylate glue. There were no reported post-operative complications from either group. Apart from demonstrating non-histotoxic form,⁽¹⁾ glue provides optimal load transfer in fracture fixation by creating a firm union through entire surface of fracture & its clinical use in orthopedics has grown especially in fixation of non-load bearing fractures as well as comminuted fractures that often comprise small fragments^(2,3). Glues do not restrict intrinsic blood supply and besides preventing gap formation it also doesn't cause significant inflammatory response thus promoting recovery⁽⁴⁾.

CONCLUSION:

In summary we advocate cyanoacrylate adhesives as an adjunct to fixation of comminuted olecranon fractures as it provides rapid stabilization for fixation which leads to shorter surgery time.