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Arthroscopic Transosseous Rotator Cuff Repair: A Prospective Study on Cost Savings, Surgical Time, and Outcomes

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Objectives: Health expenditures in the United States are outpacing national income, and affordability has become a major policy issue. Over 500,000 rotator cuff repairs (RCR) are performed annually in the United States making RCR a potential source of cost savings. Arthroscopic trans-osseous equivalent (TOE) repair using a double row of anchors has shown superior biomechanical strength compared to other techniques, but at a higher cost. The arthroscopic transosseous (TO) repair is a novel technique allowing arthroscopic rotator cuff repair to be performed without suture anchors. Arthroscopic TO repair may be a means to provide similarly excellent patient outcomes while lowering the cost of care. The primary purpose is to compare the price differential and time of surgery for an arthroscopic rotator cuff repair using anchorless TO repair versus an anchor trans-osseous equivalent (TOE) repair. A secondary purpose of the study was to evaluate outcomes at 6 months postoperatively.

Methods: A prospective, case-controlled study evaluating arthroscopic rotator cuff repair using two techniques was performed. The study group consisting of 21 patients undergoing TO repair was compared to a control group consisting of 22 patients undergoing TOE repair. The groups were controlled for size of tear, biceps treatment, acromioplasty, distal clavicle excision, and labral pathology. The primary outcome measures were surgical time as well as total cost of implants and equipment for each surgery, determined by an independent third party, Atlanticare Hospital. Secondary outcomes were changes in the SST, VAS, and SANE scores.

Results: Mean total surgical implant/equipment cost per procedure for TOE repair was \$2348.03 (SD 490.30) and for TO repair was \$1204.97 (SD 330.69; $p < 0.0001$). Mean cut to close time for TOE repair was 85 minutes (95% CI is 77-90) versus 74 (95% CI = 71-98) for TO repair. A log rank test revealed no difference in time ($p = 0.95$). A linear regression model was developed to evaluate the change in SST, VAS, and SANE scores from pre-op to 6 months follow-up. Our study was underpowered but no difference in outcome was observed.

Conclusion: Arthroscopic TO rotator cuff repair is a cost savings and time neutral technique compared to TOE repair. A mean of \$1100 can be saved in surgical cost per case. In a country that performs over 500,000 RCRs annually, utilizing a TO repair technique can provide substantial cost savings to the healthcare system.

Size of Tear	Per Case	TO	TOE	TO-TOE
Small TO=2 TOE=2	Implant Cost	\$527.38	\$1,060.20	-\$532.83
	Total Cost	\$1,037.00	\$1,954.13	-\$917.14
	Case Length	65	57	8.0
Medium TO=12 TOE=13	Implant Cost	\$626.93	\$1,334.09	-\$707.16
	Total Cost	\$1,225.04	\$2,343.42	-\$1,118.38
	Case Length	80	88	-8.0
Large TO=3 TOE=3	Implant Cost	\$563.80	\$1,624.40	-\$1,060.60
	Total Cost	\$1,230.28	\$2,436.74	-\$1,206.46
	Case Length	71	98	-27.0
Massive TO=4 TOE=4	Implant Cost	\$534.35	\$1,530.29	-\$995.94
	Total Cost	\$1,209.77	\$2,260.25	-\$1,050.48
	Case Length	72	84	-12.0
Total TO=21 TOE=22	Implant Cost	\$590.80	\$1,384.45	-\$793.65
	Total Cost	\$1,204.97	\$2,305.63	-\$1,100.66
	Case Length	74	85	-11.0
Table 1: Rotator Cuff Repair cost broken down by size of tear and repair method. (Cost values reported are averages. Case Length values reported are median values)				

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