

# Cost Effectiveness Comparison of Different Tourniquet Equipment in Hand Surgery



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## Introduction

The volume and type of hand surgery procedures for a practicing hand surgeon determine the utilization cost of a tourniquet system. Simple hand surgeries may be performed safely using an elastic tourniquet created from an esmarch bandage, such as removal of benign lesions, trigger finger and carpal tunnel release. There is no surgeon perceived differences in the creation of a bloodless surgical field or blood loss while using an elastic tourniquet in these cases. Whereas more extensive upper extremity procedures require a pneumatic tourniquet and thus necessitating the availability of a tourniquet machine and suitable cuffs.

## Questions?

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## Materials & Methods

Based on the expenses at our institution and a survey of six hand surgeons from orthopedic and plastic surgery, models are designed to demonstrate the cost effectiveness of purchasing a pneumatic tourniquet system based upon the number of surgeries performed per year.

Figure 1. Average Fixed Cost of Pneumatic Tourniquet System

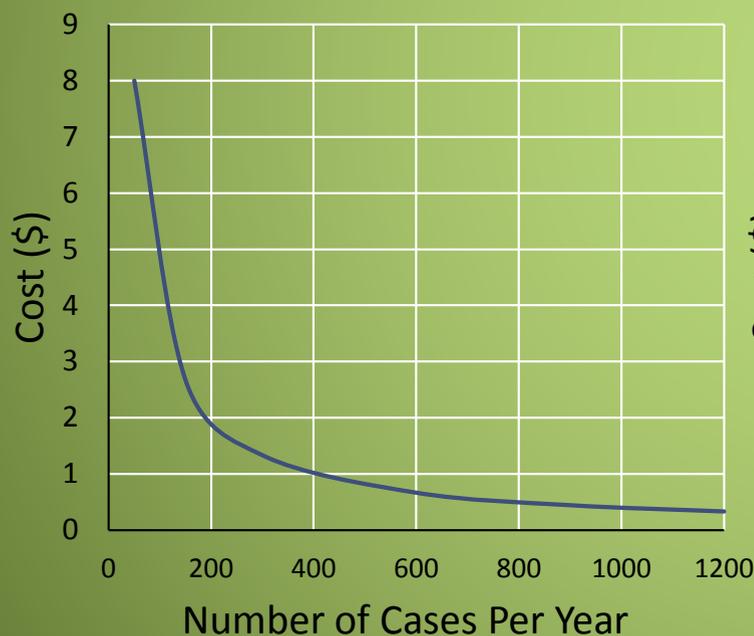
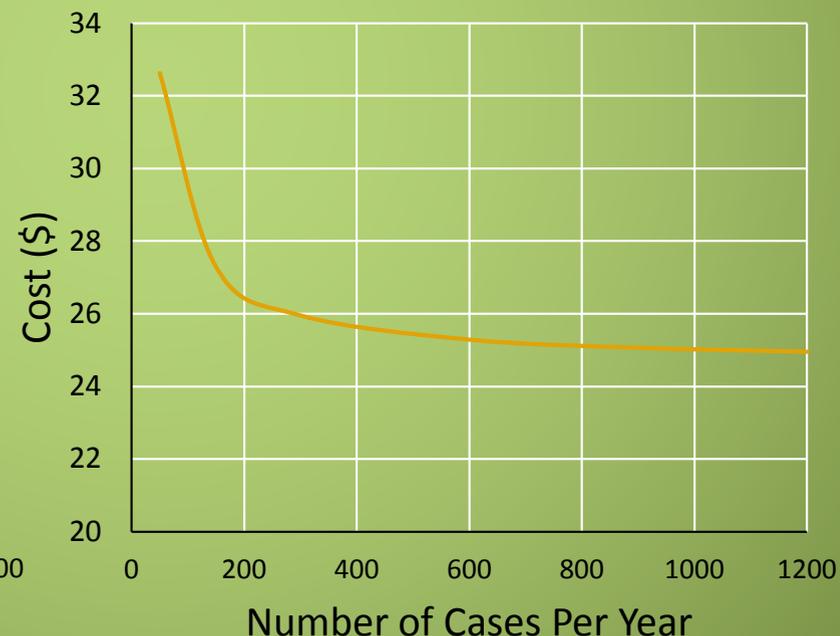


Figure 2. Average Total Cost of Pneumatic Tourniquet System



## Conclusions

Our investment cost modeling shows that hand surgeons benefit most financially from using an elastic tourniquet when appropriate and the ATC decreases with increasing productivity when pneumatic tourniquet system is involved.

## Results

- The average variable cost (AVC) of a sterile pneumatic cuff is \$24.62 [\$19.90-30.40] for size 12 to 42-inch cuffs
- A tourniquet machine costs has a fixed cost of \$4,000
- The average fixed cost (AFC) is \$8 for low volume and approaches \$0.33 per case as the volume of cases increases (Figure 1)
- The average total cost (ATC) = AVC + AFC = and decreases from \$32.62 to \$24.95 per case with a growing practice (Figure 2)
- If recycled cuffs are available, the discounted ATC drops down to \$10.27
- In comparison, for surgeries that do not rely on a pneumatic tourniquet system, there is no associated fixed cost, so AVC = ATC = \$4.35 per case
- There is a cost saving in equipment of up to \$28.27 per case when an elastic as opposed to a pneumatic tourniquet is indicated in hand surgery
- There is labor cost for the extra time spent in the application and setup of the pneumatic tourniquet