An Evaluation of Titanium Versus Polymer Clips in Laparoscopic Cholecystectomy

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Background

•Surgical clips have been used for tissue hemostasis since the advent of laparoscopic surgery

•Titanium and polymer clips are two common options, with the latter offering cost saving, design advantage of secure closure, and decreased incidence of complications.

•Previous prospective and retrospective studies have found comparable clinical outcomes in the use of the two clips for laparoscopic cholecystectomy, though cost saving has never directly been studied.

Research hypothesis:
Polymer clips offer comparable functional outcomes to metal clips during laparoscopic cholecystectomy with significant cost saving benefit.





Methods

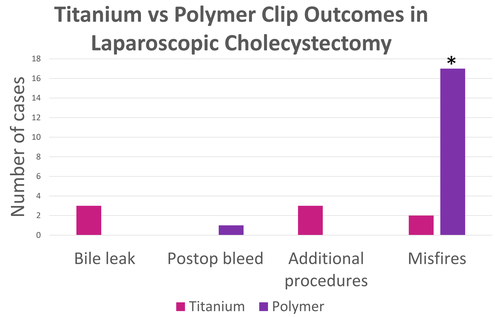
•Single institution retrospective review of 100 patients who underwent laparoscopic cholecystectomy between November and April of 2022.

•Patients were stratified into 50 consecutive cases utilizing titanium clips and 50 consecutive cases utilizing Weck® Hem-o-lok® polymer clips.

•Outcomes evaluated:
- Incidence of bile leaks
- Postoperative bleeding
- Need for additional procedures
- Misfire rate
- Cost
- Hospital LOS

Results

Demographics		
	Titanium	**Polymer**
n	50	50
Age (median [IQR])	51.00 [33.00, 65.00]	58.50 [38.25, 71.00]
Gender (%)		
Female	32 (64.0)	26 (52.0)
Male	18 (36.0)	24 (48.0)
Race (%)		
Black	5 (10.0)	4 (8.0)
Hispanic	5 (10.0)	6 (12.0)
White	40 (80.0)	40 (80.0)
ASA (median [IQR])	3.00 [2.00, 3.00]	3.00 [2.25, 3.00]



Misfire rate is statistically higher with the use of polymer clips ($p<0.001$)

Study clip cost comparison		
	Titanium	**Polymer**
Average cost per patient	$2.78	$1.05
Total cost	$139.17	$52.28

Nine cases (18%) required the opening of an additional polymer clip cartridge to complete the operation. Despite this additional expense, the total cost of clip usage was still markedly lower when polymer clips were used.

Conclusion

- Laparoscopic cholecystectomies performed with polymer clips have comparable clinical outcomes to those performed with titanium clips, while decreasing operative cost.
- We hope that this study will ignite the transition to standard usage of polymer clips in laparoscopic cholecystectomy as a cost-saving measure and set the groundwork for evaluating polymer clip outcomes in other laparoscopic procedures.

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