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In Response to the Comment on "Stump Closure Technique for Appendectomy"

"Apendektomide Kök Kapatma Tekniği" Hakkındaki Yoruma Yanıt Olarak

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Dear Editor,

We read with great interest the comments of Dr. Güzelyüz on our article "While the Laparoscopic Appendectomy Is the Gold Standard in the Treatment of Acute Appendicitis, What Should Be the Preference for Closure of the Appendix Stump?" by Yeşiltaş and Alemdar (1), published on pages 147-151 of the 24(2) issue of the Duzce Medical Journal in 2022. We would like to express our sincere gratitude to Dr. Güzelyüz for her valuable remarks and for providing us with the opportunity to further elaborate on several important clinical aspects. Our responses are presented below in a structured manner.

Morphological Features of the Appendicitis Stump

Dr. Güzelyüz emphasized, the morphology of the appendix stump, particularly its diameter, edema, and fragility, is a critical determinant of the choice of closure technique. In the presence of a broad-based stump (>10, or >12-13 mm with difficulty) or when the stump is markedly edematous and fragile, alternative closure methods should be preferred (2-4). Moreover, when the stump is ischemic, necrotic, or severely friable, neither clips nor suture material is a safe option for closure. While this surgical assumption is well recognized in daily practice, it was not explicitly underlined in our manuscript. Recent systematic reviews have also highlighted that severe edema and friability of the stump are important intraoperative factors guiding the choice of closure, often precluding the safe use of endoclips (ECs) in favor of suturing or stapling techniques. In our study, specific measurements of stump diameter were not collected, which represents a limitation of retrospective studies. We attempted to reflect the overall pathology by classifying cases as phlegmonous (86.1%), perforated (12.7%), or plastron appendicitis (1.2%). Although not statistically significant, there was a tendency toward greater use of intracorporeal knotting (ICK) in plastron (75%) and perforated (67%) appendicitis compared with ECs. This observation suggests that surgeons may prefer ICK in more complex cases, based on stump characteristics. However, the retrospective design and the lack of standardized documentation of intraoperative morphological details limited systematic evaluation. We fully agree that future prospective studies should incorporate such detailed intraoperative assessments.

Criteria for Technique Selection

The decision to use EC or ICK was based on the discretion of the operating surgeon and intraoperative findings during the study period. No defined algorithm existed, which

we acknowledge as a limitation. This variability reflects current clinical practice, as also emphasized in a recent multicenter study comparing one endoloop, two endoloops, and two ECs, which demonstrated that the choice of technique largely depends on surgeon preference and intraoperative conditions rather than on a standardized protocol (4,5). Our primary aim was not to assess the indications for each method but to retrospectively compare the overall outcomes of these two widely used closure techniques.

Interpretation of Conversions and Complications

Patients who required conversion to open surgery were excluded from our study; therefore, detailed analyses of these cases were not included. Nevertheless, if an appendix stump, whether closed with EC or ICK, was amputated during closure, leading to conversion to open surgery, such a scenario should reasonably be classified as a complication. Similar definitions have been applied in recent meta-analyses of stump closure techniques, in which intraoperative stump injuries necessitating conversion were reported together with postoperative septic complications (3). We acknowledge this nuance and concur that such an approach would increase the comprehensiveness of complication reporting.

Challenges and Clinical Experience with Endoclips

The clinical case shared by Dr. Güzelyüz, in which a retained EC was later detected radiologically near the port site, provides a highly instructive example of potential technical pitfalls. We agree that careful handling of ECs is necessary to avoid complications such as foreign body retention or port-site hernia. Although our article emphasized the "ease of use" of EC, it is evident that this advantage may be limited in certain clinical situations or by technical shortcomings. In our cohort, the overall complication rate was 1.7% (n=12), with 2.2% (n=10) in the ICK group and 0.9% (n=2) in the EC group. A fistula was observed only in the EC group (n=1), while a port-site hernia was detected in the ICK group (n=1). These findings suggest that each technique has distinct potential complications. We thank the author for highlighting these practical and clinically important aspects.

Operative Time and Complication Rates

In our study, the mean operative time was significantly shorter in the EC group (45.7±16.5 minutes) compared with the ICK group (55.1±15.6 minutes) ($p<0.001$). The overall complication rate was 1.7%, with 0.9% (n=2) in the EC group and 2.2% (n=10) in the ICK group ($p=0.354$). These results support the conclusion that EC provides benefits through shorter operative times and lower complication rates. Consistent with our findings, recent systematic reviews and comparative studies have also reported shorter operative times and comparable or lower complication rates with polymeric clip closure compared to endoloop ligation.

Conclusion and Final Remarks

Our study concluded that, regardless of the severity of appendicitis, ECs offer certain advantages for stump closure in laparoscopic appendectomy, including shorter operative time and lower complication rates. This conclusion is in line with recent systematic reviews and comparative studies from the past five years, which consistently demonstrate these advantages for polymeric clip closure over endoloop ligation. However, as emphasized by Dr. Güzelyüz, surgical decision-making must be individualized for each patient. For instance, in cases with extreme stump fragility or large diameter (e.g., 14 mm), alternative approaches such as using the periappendiceal lymph node as a patch may be required, depending on the surgeon's experience and intraoperative findings. Further high-quality prospective studies are warranted to establish the optimal stump closure strategy across diverse clinical scenarios.

We sincerely thank Dr. Güzelyüz once again for her valuable contributions and insightful comments. We are confident that such scientific dialogue contributes to the improvement of surgical practice and patient outcomes.

Ethics Committee Approval: Since our study was not an experimental study including human or animal subject, ethics committee approval was not required.

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