Improved Hemostasis with the Ethicon Linear Cutter

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Evaluation of staplers in a preclinical model shows improved vascular hemostasis control for the EES Linear Cutter (product code: NTLC75) compared to the AutoSuture DST Series™ GIA™ (product code: GIA8038S).

Background:
Inadequate hemostasis during cutting and stapling of tissue can extend the duration of surgery due to additional intervention, and potentially unnecessary tissue trauma. One key factor affecting hemostasis is compression. The NTLC75 features an innovative 3-D surgical staple technology that is designed to produce more uniform tissue compression than B-form staples.

This study was performed to determine whether the NTLC75 provides improved hemostasis performance compared to a standard stapler in either the proximal or distal location.

Methods:
Two devices, the NTLC75, manufactured by Ethicon Endo-Surgery, LLC, Cincinnati, OH, and the AutoSuture DST Series™ GIA™ (GIA8038S) from Covidien, Mansfield, MA, were evaluated for hemostasis during stapling and cutting of gastroepiploic and splenic vessels in a porcine model. Two different locations, proximal and distal along the forks of the instrument, were studied. A full factorial study of the devices by two locations was performed with 40 replications of each combination for a total of 160 firings. Blue cartridges or the blue height setting were used for the firings.

Hemostasis was rated on a five-point scale, with one indicating no bleeding and five indicating that significant intervention was required to stop the bleeding. A Wilcoxon Signed Rank Test was conducted on the paired differences in hemostasis scores. A two-tailed alpha of 0.05 was judged to be statistically significant. Means for each group were also calculated.

Results:
No differences in hemostasis scores based on location (proximal vs distal) were observed for any of the devices’ staple lines. For both locations considered separately, the NTLC75 produced significantly lower hemostasis scores than the GIA™1. Combining both locations, the NTLC75 again produced significantly lower hemostasis scores than the GIA™ (see graph). The mean score for the NTLC75 firings was 2.9. The mean score for GIA firings was 3.6 (p<0.05 vs NTLC75).

Conclusion:
The NTLC75 showed significantly improved hemostasis when compared to the AutoSuture DST Series™ GIA™.

Uniform Tissue Compression
The NTLC75 featuring 3-D staples is designed to produce uniform tissue compression in the staple line.

<table>
<thead>
<tr>
<th>AutoSuture DST Series™ GIA™ staple line</th>
<th>AutoSuture DST Series™ GIA™ B-form staple</th>
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<tbody>
<tr>
<td>NTLC75 staple line</td>
<td>NTLC75 3-D staple</td>
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1 Preclinical porcine study comparing the NTLC75, TLC75 and DST Series™ GIA™ 80 (3.8mm cartridge) Hemostasis was evaluated against a 5-point scale, with lower scores representing better hemostasis. Mean scores by instrument: NTLC-2.9, TLC-3.9, and DST series GIA-3.6. The NTLC demonstrated superior hemostasis when compared to the TLC and DST Series GIA, p<0.05.