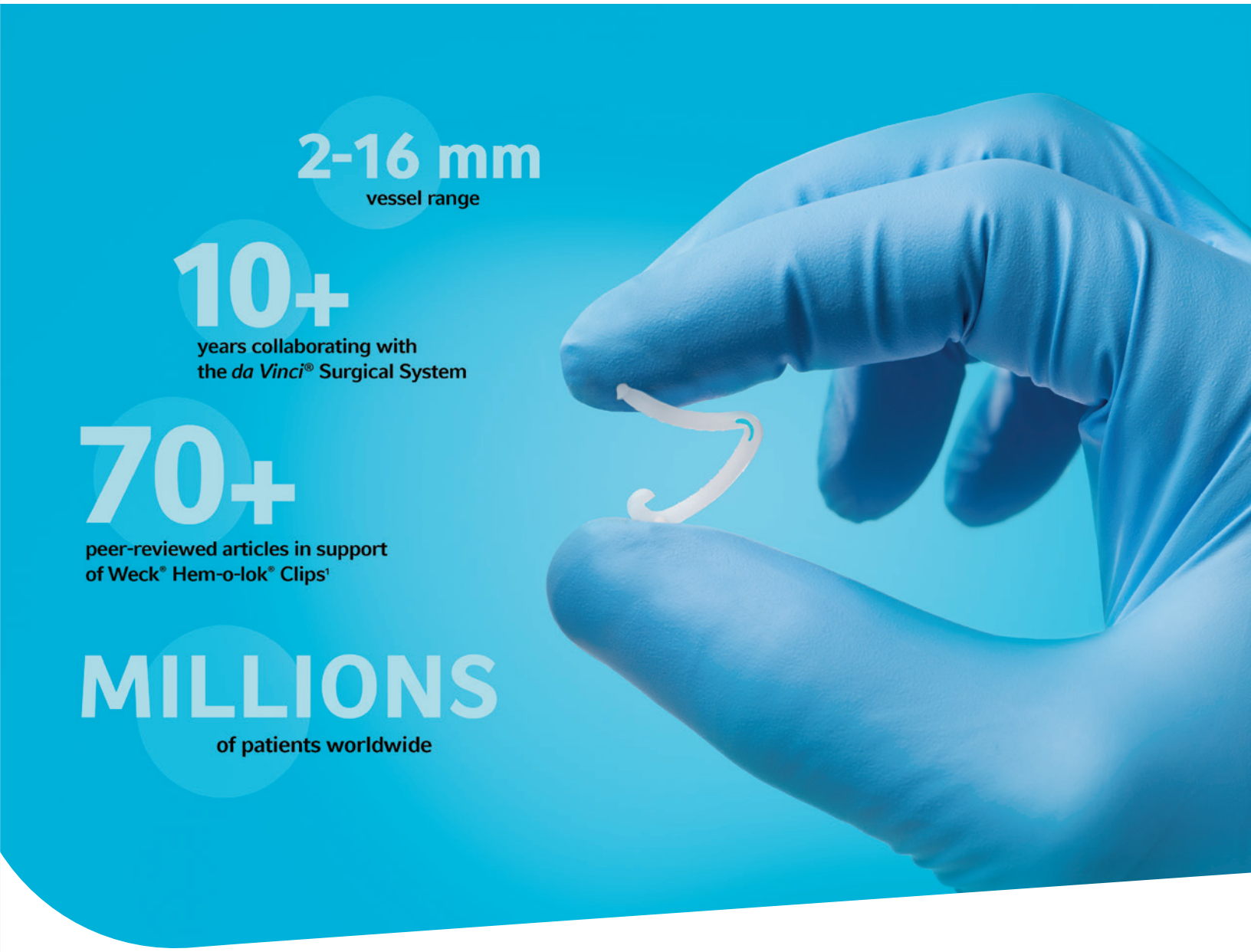
WECK®



Hem-o-lok®

Polymer Locking Ligation System
Summary of Selected Clinical Studies

Teleflex®

Hem-o-lok® Polymer Locking Ligation System

The Weck® Hem-o-lok® Polymer Locking Ligation system from Teleflex features:

- The Weck® Hem-o-lok® Polymer Ligation Clip's proprietary distal locking mechanism provides secure closure with tactile and auditory feedback
- The Hem-o-lok® Clip's non-absorbable polymer composition and flexible hinge allow it to pass through a smaller port and provide a larger distal opening than comparable metal clips
- Since it's a cold ligation system, with the Hem-o-lok® Clip there's no chance of thermal spread to vital structures
- The Weck® Hem-o-lok® Polymer Ligation Clip's integrated ridges are designed to prevent slippage with a reliable 360° grip
- Hem-o-lok® Clips come in a range of sizes indicated to ligate structures from 2 mm to 16 mm

For more information contact la.cs@teleflex.com or +1.919.433.4999

Ligation of structures during laparoscopic procedures

Endostapler versus Hem-o-lok® clip to secure the appendiceal stump and mesoappendix during laparoscopic appendectomy.

Source: *Am J Surg*. 2017;214(6):1143–1148.

Authors: Al-Temimi MH, Berglin MA, Kim EG, Tessier DJ, Johna SD.

This prospective, cohort, single-center study evaluated the safety, efficacy, and cost of the Hem-o-lok® Polymer Locking Ligation System to perform appendicular stump closure during laparoscopic appendectomy when compared with an endoscopic stapler. Overall, the Hem-o-lok® Polymer Locking Ligation System was used in 45 out of 92 (49%) laparoscopic appendectomies. Postoperative complications occurred less often with the Hem-o-lok® Polymer Locking Ligation System versus the endoscopic stapler (2.2% vs. 19.2%; P=0.009); however, the rate of intraoperative events was similar between the groups. No differences in length of hospital stay or operative time were observed between the groups. One patient (2.2%) in the Hem-o-lok® Polymer Locking Ligation System group was readmitted for treatment of an intra-abdominal abscess. For each laparoscopic appendectomy case, the minimum cost for the endoscopic stapler was $273.13, while the cost of the Hem-o-lok® Polymer Locking Ligation System was $32.14.

The authors concluded that the Hem-o-lok® Polymer Locking Ligation System was an effective and cost-efficient alternative to the endoscopic stapler for closure of the appendicular stump during laparoscopic appendectomy.

The influence of the different forms of appendix base closure on patient outcome in laparoscopic appendectomy: a randomized trial.

Source: *Surg Endosc*. 2017; doi: 10.1007/s00464-017-5924-z. [Epub ahead of print]

Authors: Delibegović S, Mehmedovic Z

This randomized, four-arm clinical study compared the clinical outcomes of patients undergoing laparoscopic appendectomy during which closure of the appendicular stump was achieved using one of four techniques: a single XL Hem-o-lok® Polymer Locking Ligation System clip, an Endoloop® ligature, a 45 mm stapler, or a titanium DS clip. Overall, 120 patients with acute appendicitis were randomly divided between the groups (30 patients in each group). No morbidity and no conversion cases were reported in any group. The mean time of application was significantly shorter in the stapler group than the other forms of closure (P<0.0001); the mean overall operative time was significantly shorter in the stapler group than in the titanium DS clip group or the Endoloop ligature group (both, P<0.0001), but did not differ significantly from the Hem-o-lok® Polymer Locking Ligation System clip group.

The authors concluded that, while all forms of closure of the appendix are acceptable, Hem-o-lok® Polymer Locking Ligation System clips and titanium DS clips, "have the best potential for further development, and will probably become the method of choice in securing the base of the appendix."

The use of a single Hem-o-lok® clip in securing the base of the appendix during laparoscopic appendectomy.

Source: *J Laparoendosc Adv Surg Tech A*. 2012;22(1):85–87.

Authors: Delibegović S

This prospective study compared the intra- and postoperative course of patients undergoing laparoscopic appendectomy during which closure of the appendicular stump was achieved using one of three techniques: one Endoloop ligature, a 45 mm stapler, or a single, non-absorbable Hem-o-lok® Polymer Locking Ligation System clip. Overall, 90 patients with acute appendicitis were assigned at random to the three groups. The time of application of the Hem-o-lok® Polymer Locking Ligation System was significantly shorter than the time of application of the Endoloop ligature (P<0.0001) but significantly longer than the application time of the stapler (P<0.0001). The mean operation time with the Hem-o-lok® Polymer Locking Ligation System was similar to that of the Endoloop group (P<0.22) and the stapler group (P<0.16). No differences in length of hospital stay were observed between the groups. Compared with the price of a stapler (€230.70) or one Endoloop ligature (€28.85), the price of a single Hem-o-lock® Polymer Locking Ligation System clip (€2.35) was the most cost effective. No postoperative complications were observed in any group.

The authors concluded that the use of a single Hem-o-lok® Polymer Locking Ligation System clip for closure of the appendicular stump during laparoscopic appendectomy was as effective as an Endoloop ligature and/or stapler.

A comparison of non-absorbable polymeric clips and Endoloop ligatures for the closure of the appendicular stump in laparoscopic appendectomy: a prospective, randomized study.

Source: *Surg Laparosc Endosc Percutan Tech.* 2013;23(3):255–258.

Authors: Colak E, Kement M, Ozlem N, Mutlu T, Yildirim K, Gurer A, Aktimur R.

This single-center, prospective, randomized study evaluated the clinical outcomes of patients in whom closure of the appendicular stump during laparoscopic appendectomy was achieved with the Hem-o-lok® Polymer Locking Ligation System or an Endoloop ligature. Overall, 60 patients with acute appendicitis were randomized to the two groups; of these, 53 patients were included in the analysis (Hem-o-lok® Polymer Locking Ligation System, n=26; Endoloop, n=27). The mean operation time with the Hem-o-lok® Polymer Locking Ligation System clip was shorter than with the Endoloop ligature; however, the difference observed was not statistically significant (P=0.072). No statistically significant between-group differences were observed in the rates of intra- and postoperative complications, or in the length of postoperative hospitalization. The Hem-o-lok® Polymer Locking Ligation System (3 clips) was more cost effective than the Endoloop ligatures (3 ligatures); (US $30 versus $120, respectively).

The authors concluded that, in this limited study, the use of the Hem-o-lok® Polymer Locking Ligation System for appendicular stump closure during laparoscopic appendectomy was a feasible and cost-effective alternative to the use of Endoloop ligatures.

Hem-o-lok® plastic clips in securing of the base of the appendix during laparoscopic appendectomy.

Source: *Surg Endosc.* 2009;23(12):2851–2854.

Authors: Delibegović S, Matović E.

This prospective, non-randomized study evaluated the technical feasibility and postoperative course of patients in whom appendicular stump closure during laparoscopic appendectomy was achieved with double Hem-o-lok® Polymer Locking Ligation System clips or double Endoloop ligatures. In total, 52 patients were enrolled in the study (Hem-o-lok® Polymer Locking Ligation System, n=28; Endoloop, n= 24). The mean (± sd) operation time was significantly shorter with the double Hem-o-lok® Polymer Locking Ligation System clips compared with the double Endoloop ligatures (38.7 ± 5.0 minutes vs. 47.1 ± 6.7 minutes; P<0.001). The mean length of hospital stay was similar in both groups. One intraoperative complication (bleeding of mesoappendix) was observed in the Hem-o-lok® Polymer Locking Ligation System group. No postoperative complications were observed in either group. The double Hem-o-lok® Polymer Locking Ligation System clips were more cost effective than the double Endoloop ligatures (3 clips, €76.90 versus 3 ligatures, €88.50, respectively).

The authors concluded that advantageous attributes of the Hem-o-lok® Polymer Locking Ligation System include the simplicity of application, shorter operation time, and lower cost compared with the standard Endoloop procedure for appendicular stump closure during laparoscopic appendectomy.

Fast and safe closing of urethra during laparoscopic radical cystectomy.

Source: *J Endourol.* 2006;20(9):651–653.

Authors: Porpiglia F, Renard J, Billia M, Cossu M, Morra I, Terrone C, Scarpa RM.

This case series describes the authors' experiences of using Hem-o-lok® Polymer Locking Ligation System clips to secure the membranous urethra to prevent spillage during laparoscopic radical cystectomy procedures. This technique was used in 14 laparoscopic radical cystectomies performed in a single hospital. The technique was successful in all cases with negative margins observed at the level of the urethra, sufficient for anastomosis with the neobladder, if appropriate. No local recurrences were reported over a mean follow-up of 14 months (range, 5–29 months). Of the 7 male patients who received a neobladder, three are continent during the day and four experience mild or moderate incontinence. Three are continent during the day, and four experience mild or moderate incontinence.

The authors concluded that the use of Hem-o-lok® Polymer Locking Ligation System clips to close the membranous urethra during laparoscopic radical cystectomy was a simple and effective alternative to established techniques.

Clinical research of renal vein control using Hem-o-lok® clips in laparoscopic nephrectomy.

Source: *Int J Urol.* 2006;13(8):1147–1149.

Authors: Izaki H, Fukumori T, Takahashi M, Nakatsuji H, Oka N, Taue R, Nishitani MA, Kanayama HO.

This case series describes the authors' experience of using the Hem-o-lok® Polymer Locking Ligation System (XL clip size) for the routine control of renal veins during laparoscopic nephrectomy. Overall, 40 laparoscopic nephrectomies were performed in a single hospital between June 2004 and August 2005. In all 40 cases, vascular control using the Hem-o-lok® Polymer Locking Ligation System (XL clip size) was successful with no uncontrolled bleeding or slipping of the clips observed in any case. Following renal pedicle dissection, the mean (± standard deviation) ligation time for achieving renal vein control was 167.0 ± 48 seconds (range, 122–295 seconds) using the Hem-o-lok® Polymer Locking Ligation System (XL clip size; mean, three clips) compared with 68 ± 24.0 seconds (range, 54–150 seconds) using a gastrointestinal anastomosis stapler. The operative costs of renal vein ligation were noticeably lower with the Hem-o-lok® Polymer Locking Ligation System (XL clip size) compared with those of gastrointestinal anastomosis stapling (US $30 for three clips versus US $409, respectively).

The authors concluded that the Hem-o-lok® Polymer Locking Ligation System (XL clip size) is a cost-effective and reliable option for the control of renal veins in laparoscopic nephrectomy.

Robotic partial nephrectomy with sliding-clip renorrhaphy: technique and outcomes.

Source: *Eur Urol.* 2009;55(3):592–599..

Authors: Benway BM, Wang AJ, Cabello JM, Bhayani SB.

This paper describes the techniques used and clinical outcomes of patients undergoing robotic partial nephrectomy (RPM), with sliding clip renorrhaphy performed using Hem-o-lok® Polymer Locking Ligation System clips. Between 2007 and 2008, a single surgeon performed RPN on 50 eligible patients; of these, Hem-o-lok® Polymer Locking Ligation System clips with LapraTy clips were used in 37 cases. Compared with traditional tied sutures or assistant-placed clip closures, sliding-clip renorrhaphy using Hem-o-lok® Polymer Locking Ligation System clips significantly reduced mean operative time (from 169.8 minutes to 136.8 minutes; P=0.0018) and mean warm ischemia times (from 28.3 minutes to 20.6 minutes; P=0.0029). No significant difference was observed with regard to blood loss or length of hospital stay. The potential limitations of RPN that were identified included the increased cost associated with robotic procedures and a greater reliance on the bedside assistant.

The authors concluded that sliding clip renorrhaphy performed with Hem-o-lok® Polymer Locking Ligation System clips was effective, easily implemented, and had the potential to significantly reduce overall operative and warm ischemia times.

Reducing robotic prostatectomy costs by minimizing instrumentation.

Source: *J Endourol.* 2015;29(5):555–560.

Authors: Delto JC, Wayne G, Yanes R, Nieder AM, Bhandari A.

This single-center, retrospective review was performed to compare operative times, estimated blood loss, and intraoperative complications associated with robotic-assisted laparoscopic prostatectomy (RALP) performed by two surgeons using two sets of surgical equipment. The two surgeons surveyed had each performed 64 and 61 RALP procedures over a 20-month period. By comparing the equipment used by both surgeons, and through consultation with surgeons from other institutions, a minimally viable toolbox of equipment (used by surgeon 1) was identified, which resulted in a ~40% cost saving compared with the equipment used by surgeon 2. The largest cost saving was achieved through the elimination of an energy source and the usage of Hem-o-lok® Polymer Locking Ligation System Clips. In addition, the adoption of the minimally viable toolbox of surgical equipment was associated with potential improvements in mean blood loss (148 vs. 265 mL; P=0.045) and operative time (132 vs. 158 minutes; P=0.001), and an absence of intraoperative complications over the 20-month period.

The authors concluded that modifications, such as the elimination of an energy source and the usage of Hem-o-lok® Polymer Locking Ligation System clips, can be made to the surgical equipment used during RALP to reduce costs.

Reference:
1. Based on a tertiary clinical literature search performed 11/2014. 89 peer-reviewed articles were accepted according to Inclusion/Exclusion criteria, of which 80% (71 articles) showed favorable outcomes in support of Hem-o-lok Clips. Data on file, Teleflex Incorporated, Report #MLIB-000588.

Teleflex is a global provider of medical technologies designed to improve the health and quality of people's lives. We apply purpose driven innovation – a relentless pursuit of identifying unmet clinical needs – to benefit patients and healthcare providers. Our portfolio is diverse, with solutions in the fields of vascular and interventional access, surgical, anesthesia, cardiac care, urology, emergency medicine and respiratory care. Teleflex employees worldwide are united in the understanding that what we do every day makes a difference. For more information, please visit teleflex.com.

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Hem-o-lok® Ligating Clips are contraindicated for use as a fallopian contraceptive tubal occlusion device and contraindicated for use in ligating the renal artery during laparoscopic donor nephrectomies.

Except as otherwise noted, Teleflex did not sponsor, pay for, or independently verify the results of the work summarized here and therefore is not responsible for the methodology utilized or the results obtained. Teleflex has made all efforts to summarize the work accurately but cannot guarantee the accuracy or completeness of the summary as it is based on the original paper. In the event an inaccuracy arises, please inform Teleflex so that it can be corrected.

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