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Erbe Website	www.erbe-med.com
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Publication overview

Erbe technology in gynecology

LYMPHADENECTOMY

Tsuda N, Ushijima K, Kawano K, Takemoto S, Nishio S, Sonoda G, Kamura T, Prevention of lymphocele development in gynecologic cancers by the electrothermal bipolar vessel sealing device, *J Gynecol Oncol* 2014; 25(3): 229-35.

The authors compare pelvic lymphadenectomy with and without bipolar vessel sealing in 321 patients.

Conclusion: Using BiClamp results in significantly less lymphocele formation in comparison with lymphadenectomy performed without a sealing instrument.

Takeuchi H, Saeki T, Shigekawa T, Sano H, Nakamiya N, Matsuura K, Misumi M, Takahashi T, Fujiuchi N, Okubo K, Osaki A, Sakurai T, Koyama I, BiClamp Forceps Significantly Shorten the Operation Time for Breast Surgery, *Surg Today* 2010; 40: 706-10:

BiClamp was used in breast cancer patients (clinical stages I and II) as part of a clinical study. In this respect, the thermofusion technique using BiClamp was compared to conventional surgery using suture ligatures with regard to the removal of axillary lymph nodes.

The operating time in the BiClamp group was significantly shorter than in the control group (90 +/-18 minutes vs. 115 +/-33 minutes; $p=0.017$). Blood loss tended to be lower in the BiClamp group than in the control group. In terms of the length of the hospital stay and dependence on body mass index, no differences were apparent between the comparison groups.

Thermofusion technique using BiClamp was considered by the authors to be safe and useful in breast surgery with removal of axillary lymph nodes.

VAGINAL HYSTERECTOMY

Ghirardini G, Mohamed M, Bartolamasi A, Malmusi S, Vecchia ED, Algeri I, Zanni A, Renzi A, Cavicchioni O, Braconi A, Pazzoni F, Albioni C, Minimally invasive vaginal hysterectomy using bipolar vessel sealing: Preliminary experience with 500 cases, *J Obstet Gynaecol* 2013; 33: 79-81.

The authors evaluate the surgical outcome of minimally-invasive vaginal hysterectomy using ERBE BiClamp in a group of 500 patients.

The duration of surgery, blood loss, perioperative complications and the length of the hospital stay were evaluated.

Conclusion: The authors found that bipolar vessel sealing using BiClamp is a safe and feasible alternative to the use of sutures in vaginal hysterectomy. The resulting operating times are shorter, with lower blood loss and an acceptable surgical outcome.

Clavé H, Clavé A, Mini-invasive vaginal hysterectomy with thermofusion hemostasis, *J Visc Surg* 2011, 148: e189-96.

Using a variety of illustrations, the authors describe the performance of minimally-invasive vaginal hysterectomy using thermal hemostatic clamps, for example BiClamp.

Conclusion: In comparison with conventional vaginal hysterectomy, minimally-invasive vaginal hysterectomy using thermofusion hemostasis forceps is a simpler, faster and less expensive surgical approach.

Leo V, Riboni F, Gambaro C, Surico D, Surico N, Vaginal hysterectomy and multimodal anesthesia with bipolar vessel sealing (BiClamp forceps) versus conventional suture technique: quality results' analysis, *Arch Gynecol Obstet* 2011; 285: 1025-9.

The authors compare vaginal hysterectomy and salpingo-oophorectomy using BiClamp and multimodal anesthesia to vaginal hysterectomy with salpingo-oophorectomy and spinal anesthesia.

Conclusion: The BiClamp technique with multimodal anesthesia offers surgical, anesthesiological and commercial benefits. It is a minimally-invasive procedure, distinguished by lower morbidity, shorter operating times and reduced costs in comparison with conventional vaginal hysterectomy.

Samulak D, Wilczak M, Michalska MM, Pieta B, Vaginal hysterectomy with bipolar coagulation forceps (BiClamp) as an alternative to the conventional technique, *Arch Gynecol Obstet* 2011; 284(1): 145-9.

The goal of the authors was to determine the advantages and disadvantages of bipolar forceps coagulation (BiClamp) in vaginal hysterectomy as well as to draw a comparison with conventional technique. The operating time and the length of the hospital stay were comparable between the groups. Blood loss was lower in the BiClamp group. There were no serious complications in any of the groups. The patients in the BiClamp group reported less discomfort, recovered more quickly, and were thus less expensive to treat.

Zubke W, Hornung R, Wässerer S, Hucke J, Füllers U, Werner C, Schmitz P, Lobodasch K, Hammermüller U, Wojdat R, Volz J, De Wilde RL, Wallwiener D, Bipolar coagulation with the BiClamp forceps versus conventional suture ligation: a multicenter randomized controlled trial in 175 vaginal hysterectomy patients, *Arch Gynecol Obstet*. 2009 Nov;280(5):753-60.

In a multicenter study, bipolar vessel sealing using BiClamp was compared to conventional suture ligatures in terms of vaginal hysterectomy. Of the 175 patients treated, 88 underwent BiClamp therapy. The results were less post-operative discomfort, lower blood loss and shorter operating times in each case in the BiClamp group. Treatment with BiClamp was deemed significantly more effective. There was no difference in terms of the length of hospitalization.

Chia KV, Tandon S, Moukarram H, Vaginal hysterectomy is made easier with ERBE BiClamp forceps, *J Obstet Gynaecol* 2007; 27: 723-5.

The authors compared vaginal hysterectomy with abdominal hysterectomy in a group of 100 patients. They found that vaginal hysterectomy using BiClamp could be completed more safely and more easily than compared to abdominal hysterectomy. They also note that uterine structures (ovaries, fallopian tubes) can be easily removed through vaginal access.

Zubke W, Krämer B, Wallwiener D, Use of the BiClamp (a bipolar coagulation forceps) in gynecological surgery, *Gynecol Surg* 2007; 4: 9-16.

The authors described the electrical design (modulation) of BiClamp mode (not ThermoSeal) that is used to operate ERBE BiClamp, as well as the applications of BiClamp in vaginal hysterectomy.

Clavé H, Baar H, Niccolai P, Painless vaginal hysterectomy with thermal hemostasis (results of a series of 152 cases), *Gynecol Surg* 2005; 2: 101-105.

In this study of 152 patients, the use of BiClamp in vaginal hysterectomy is described for the first time. This approach enabled the length of the hospital stay to be reduced to 1 day. In the opinion of the authors, the minimally-invasive approach results in improved quality of life for the patients.

Lobodasch K, Zubke W., Vaginale Hysterektomien mit Hilfe der BiClamp, *Geburtsh Frauenheilk* 2005; 65: 1187-9.

A comparison was made between vaginal hysterectomy on 452 patients using BiClamp and 100 patients who were treated using conventional vaginal procedures. With the aid of BiClamp, it was possible to significantly reduce intraoperative blood loss. There was also significantly less post-operative discomfort and the length of the stay in the clinic was shorter than in the case of conventional technique.

TRANSCERVICAL RESECTION (LLETZ)

Ott J, Jatzko B, Nemeth Z, Wirth S, Wagner G, Is routine hysteroscopy during LLETZ a valuable additional procedure? *Acta Obstet Gynecol Scandinavica* 2011; 90: 1284-6.

In a patient population of 442 patients, the authors retrospectively investigated whether clinical benefit could be derived from hysteroscopy carried out in addition to loop excision of the transformation zone (LLETZ). ERBE VIO 300 D was used in excision of the transformation zone.

Conclusion: LLETZ can be routinely used to treat cervical intraepithelial neoplasia (CIN) without the need for additional hysteroscopy.

TLH

Hessler P-A, Vergleichende Untersuchung zur Effektivität verschiedener instrumenteller Operationstechniken bei der totalen laparoskopischen Hysterektomie (TLH), *Geburtsh Frauenheilk* 2008; 68: 77-82.

The bipolar coagulation technique is compared with the ultrasonic technique in total laparoscopic hysterectomy.

Conclusion: Bipolar coagulation instruments (BiClamp) demonstrate benefits in dissection of larger vessels, while in contrast, ultrasonic techniques (SonoSurg, Ultracision) offer superior exposure characteristics.

LAVH / LASH

Zubke W, Wallwiener D, Neue Formen der Hysterektomie bei benignen uterinen Erkrankungen, *Geburtsh Frauenheilk* 2004; 64: 314-5.

The hysterectomy is one of the most common gynecological procedures. The authors mention the various surgical approaches to hysterectomy and discuss their advantages and disadvantages. The authors conclude that in the case of benign uterine conditions, preference should be given to laparoscopic supracervical hysterectomy or vaginal hysterectomy performed using the bipolar coagulation forceps (BiClamp). In the case of complicated hysterectomies, laparoscopically assisted vaginal hysterectomy (LAVH) is also recommended.

Rothmund R, Szyrach M, Rada A, Enderle MD, Neugebauer A, Tarran FA, Brucker S, Hausch A, Wallwiener C, Krämer B, A prospective, randomized clinical comparison between UltraCision and the novel

sealing and cutting device BiCision in patients with laparoscopic supracervical hysterectomy, *Surg Endosc* 2013; 27: 3852-9.

The authors compare the BiCision and UltraCision instruments in laparoscopic supracervical hysterectomy (LASH). The operating times were the primary focus of the study. The secondary goal was the investigation of blood loss, coagulation and cutting characteristics, and post-operative complications. The follow-up period was 3 months.

Operating times were comparable. BiCision technology resulted in lower blood loss, less tissue adhesion to the instrument as well as improved tissue fixation between the instrument jaws. Intraoperative and post-operative complications were not observed with either of the instruments.

Conclusion: The efficacy and quality of vessel sealing of the BiCision instrument was comparable in terms of effectiveness with that of the UltraCision instrument

OTHERS

Li L, Qie RQ, Wang XL, Hang J, Zhang Q, Li DQ, He YD, BiClamp forceps was significantly superior to conventional suture ligation in radical abdominal hysterectomy: a retrospective cohort study in 391 cases. *Arch Gynecol Obstet* 2012; 286: 457-63.

The study shows the results of the evaluation of the efficiency and security of ERBE BiClamp in radical abdominal hysterectomy for the treatment of cervical carcinomas.

A comparison was made between conventional suture ligatures and the procedure using BiClamp. The procedure using BiClamp was shorter, blood loss was lower, the rate of intraoperative blood transfusion was lower, the post-operative blood transfusion rate was the same, the length of the patients' stay in hospital was shorter and there were fewer post-operative complications.

Conclusion: The BiClamp procedure was more efficient and easier to control than conventional suture ligatures in the treatment of cervical carcinomas using radical abdominal hysterectomy.

Szyrach MN, Paschenda P, Afify M, Schälller D, Tolba RH, Evaluation of the novel bipolar vessel sealing and cutting device BiCision in a porcine model, *Min Invasiv Tech* 2012; 21: 402-7.

The laparoscopic bipolar vessel sealing instrument BiCision was compared to the laparoscopic bipolar vessel sealing instrument EnSeal using the visceral and peripheral arteries and veins in an animal (porcine) model.

In terms of the parameters that were investigated (burst pressure in veins, cutting quality, tissue adhesion to the instrument, vessel sealing interval, vessel diameter and lateral thermal damage), both instruments delivered comparable results.

The BiCision instrument also delivered significantly greater burst pressures when sealing arteries. BiCision is just as efficient and efficient as EnSeal under preclinical conditions.

Zhu Q, Ruan J, Zhang L, Jiang W, Liu H, Shi G, The study of laparoscopic electro-surgical instruments on thermal effect of uterine tissues, *Arch Gynecol Obstet* 2012; 285: 1637-41.

The thermal damage of myometrium tissue is verified using 5 laparoscopic electro-surgical instruments. These include:

Monopolar forceps, bipolar forceps, PK scalpel, LigaSure, BiClamp.

The zones of thermal damage (width and depth) were histologically determined.

LigaSure produced a significantly broader area of damage than the PK scalpel and BiClamp. Monopolar and bipolar forceps resulted in greater depth of damage than compared to BiClamp. There is no statistically

significant difference regarding the depth of damage between BiClamp, the PK scalpel and LigaSure.

Suprasongsin C, Boonyakitanon M, Comparison of conventional suture versus electro-surgical bipolar vessel sealing in abdominal hysterectomy: a randomized control trial, J Health Science 2012; 21(3): 415-22.

The authors compare the conventional suture technique in abdominal hysterectomy with electro-surgical, bipolar vessel sealing using BiClamp.

Conclusion: Using BiClamp in abdominal hysterectomy can reduce the operative time and result in less intraoperative blood loss and less post-operative pain.

Wallwiener CW, Junginger SH, Zubke W, Brucker SY, Enderle MD, Neugebauer A, Schönfisch B, Wallwiener M, Bipolar vessel sealing: instrument contamination and wear have little effect on seal quality and success in a porcine in vitro model, Langenbecks Arch Surg 2014; 399: 863-71.

As part of a systematic investigation, the authors describe the impact of contamination of the BiClamp instrument on sealing quality. Mixtures of blood, collagen and fat were applied to the instrument surfaces in order to simulate contamination with biological tissue.

Conclusion: While the pressure applied was of critical significance in bipolar vessel sealing, it could be demonstrated that the experimental contamination did not have a negative impact on the quality of vessel sealing.

Rothmund R, Krämer B, Neis F, Brucker S, Wallwiener M, Reda A, Hausch A, Scharpf M, Szyrach MN, Efficacy and safety of the novel electro-surgical vessel sealing and cutting instrument BiCision, Surg Endosc 2012, 26: 3334-43.

The efficiency and safety of the new BiCision dissection, hemostasis and cutting instrument (ERBE) was compared to the EnSeal (Ethicon Endo-Surgery) instrument.

The authors compared the following parameters: closure rate, sealing quality, sealing interval, lateral thermal damage, cutting quality, tissue adhesion to the instrument, vessel burst pressure and complications in an in vivo animal (porcine) model. It became apparent that BiCision was least as good as EnSeal for all parameters tested. In fact, BiCision was superior to EnSeal in terms of burst pressure with regard to arteries and veins, as well as in terms of cutting quality.

Conclusion: The authors were able to demonstrate that the efficiency and quality of vessel sealing (vessels up to 7mm) using the BiCision instrument are at least as good as that of EnSeal.

Richter S, Kollmar O, Schilling MK, Pistorius GA, Menger MD, Efficacy and quality of vessel sealing. Comparison of a reusable with a disposable device and effects of clamp surface geometry and structure, Surg Endosc 2006; 20: 890-94.

As part of an animal study, different vessel sealing instruments (BiClamp and LigaSure) are compared on a porcine model in terms of the impact of various jaw surface structures on sealing quality. For this purpose, smooth unstructured surfaces (BiClamp for open surgery; LigaSure lap.) are compared to surfaces with a grooved structure (BiClamp lap.; LigaSure for open surgery).

Clamps with an unstructured surface result in less failure during sealing, however, lateral thermal damage and adhesion is greater in this case.



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