

## Appendix 1 – Search strategy (effectiveness and safety)

Searches have been performed on 10<sup>th</sup> February 2014 in the following databases: MEDLINE, Embase, and The Cochrane Library (all databases).

Searches started from January 2004. Only full-text in English. Only studies on humans.

### MEDLINE

Ultrasonic Surgical Procedures/instrumentation (MESH) OR Ultrasonic Surgical Procedures/methods (MESH) OR Ultrasonic Surgical Procedures/adverse effects (MESH) OR "ultrasonic surgical procedure*" OR "surgical instruments" OR "ultrasound surgery"	AND	harmonic scalpel" OR "harmonic shears" OR "ultrasonic shears" OR "ultrasonic scalpel" OR "ultrasonic coagulator" OR Dissector OR Cauterization, OR Cutting, OR Ablation, OR Coagulation, OR Dissection, OR Dissector OR Vessel sealing, OR Resection, OR Incision. OR Scalpel OR "surgical energy device" OR "Ultrasonic energy device" OR Sonicision OR SonoSurg OR Thunderbeat OR Sonoca OR "Bipolar radiofrequency devices" OR "Energy based device*" OR Sonication OR Sonicision OR Ultracision OR Ultra* scalpel OR Vaporization
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OR

"Energy device*" OR Ultrasonic AND procedure* OR "energy based" OR "harmonic scalpel OR Ultrasoni AND device* OR Ultrasonic AND scalpel OR Ultrasonic AND shears	AND	Surgery OR surgical
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Clinical Trial; Comparative Study; Meta-Analysis; Review; Systematic Reviews; Randomized Controlled Trial; Controlled Clinical Trial.

## Embase

<p>Ultrasound surgery (EMTREE TERM) OR</p> <p>(Ultrasonic Surgical Procedures).exp OR</p> <p>(ultrasonic surgical procedure).exp OR</p> <p>(surgical instruments).exp OR</p> <p>(ultrasound surgery).exp</p>	<p>AND</p>	<p>(harmonic scalpel) OR</p> <p>(harmonic shears) OR</p> <p>(ultrasonic shears) OR</p> <p>(ultrasonic scalpel) OR</p> <p>(ultrasonic coagulator) OR</p> <p>Dissector OR</p> <p>Cauterization, OR</p> <p>Cutting, OR</p> <p>Ablation,OR</p> <p>Coagulation, OR</p> <p>Dissection, OR</p> <p>Dissector OR</p> <p>(Vessel sealing) OR</p> <p>Resection, OR</p> <p>Incision.OR</p> <p>Scalpel OR</p> <p>(surgical energy device) OR</p> <p>(Ultrasonic energy device) OR</p> <p>Sonicision OR</p> <p>SonoSurg OR</p> <p>Thunderbeat OR</p> <p>Sonoca OR</p> <p>(Bipolar radiofrequency devices) OR</p> <p>(Energy based devisce) OR</p> <p>Sonication OR</p> <p>Sonicision OR</p> <p>Ultracision OR</p> <p>(Ultra scalpel) OR</p> <p>Vaporization</p>
<p>"Energy device*" OR</p> <p>Ultrasonic AND procedure*OR</p> <p>"energy based" OR</p> <p>"harmonic scalpel OR</p> <p>Ultrasoni AND device* OR</p> <p>Ultrasonic AND scalpel OR</p> <p>Ultrasonic AND shears</p>	<p>AND</p>	<p>Surgery OR surgical</p>

([cochrane review]/lim OR [controlled clinical trial]/lim OR [meta analysis]/lim OR [randomized controlled trial]/lim OR [systematic review]/lim) AND ([article]/lim OR [review]/lim OR [short survey]/lim) AND ([english]/lim AND [humans]/lim AND [embase]/lim

**Cochrane Library (all databases)**

<p>Ultrasonic Surgical Procedures/instrumentation (MESH) OR Ultrasonic Surgical Procedures/methods (MESH) OR Ultrasonic Surgical Procedures/adverse effects (MESH) OR "ultrasonic surgical procedure*" (ti,ab,kw) OR "surgical instruments" (ti,ab,kw) OR "ultrasound surgery" (ti,ab,kw)</p>	<p>AND</p>	<p>"harmonic scalpel" (ti,ab,kw) OR "harmonic shears" " (ti,ab,kw) OR "ultrasonic shears" " (ti,ab,kw) OR "ultrasonic scalpel" " (ti,ab,kw) OR "ultrasonic coagulator" " (ti,ab,kw) OR Dissector " (ti,ab,kw) OR Cauterization, " (ti,ab,kw) OR Cutting, " (ti,ab,kw) OR Ablation, " (ti,ab,kw) OR Coagulation, " (ti,ab,kw) OR Dissection, " (ti,ab,kw) OR Dissector " (ti,ab,kw) OR Vessel sealing, " (ti,ab,kw) OR Resection, " (ti,ab,kw) OR Incision. " (ti,ab,kw) OR Scalpel " (ti,ab,kw) OR "surgical energy device" " (ti,ab,kw) OR "Ultrasonic energy device" " (ti,ab,kw) OR Sonicision " (ti,ab,kw) OR SonoSurg" (ti,ab,kw) OR Thunderbeat" (ti,ab,kw) OR Sonoca " (ti,ab,kw) OR "Bipolar radiofrequency devices" " (ti,ab,kw) OR "Energy based device*" " (ti,ab,kw) OR Sonication " (ti,ab,kw) OR Sonicision " (ti,ab,kw) OR Ultracision " (ti,ab,kw) OR Ultra* scalpel" (ti,ab,kw) OR Vaporization " (ti,ab,kw)</p>
<p>"Energy device*" OR Ultrasonic AND procedure* OR "energy based" OR "harmonic scalpel OR Ultrasoni AND device* OR Ultrasonic AND scalpel OR Ultrasonic AND shears</p>	<p>AND</p>	<p>Surgery OR surgical</p>

## Appendix 2 – Excluded studies (effectiveness and safety)

**Table A2.1:** Summary of the excluded records with reason for exclusion (from 366 records initially identified).

Reasons for exclusion	Number of records excluded
Study design – non comparative	14
Study design – retrospective	44
Study design – single-case report	2
Study design – ex vivo study	10
Study design – surgical technique	5
Study design – surgical management	6
Publication type – author reply	1
Study status – study protocol	2
Study type – narrative review	15
Study type – conference abstract	6
Irrelevant endpoint for this review	3
Other application of ultrasonic energy	69
Not on ultrasonic energy device	41
Device not specified or not of interest	18
Duplicate citations	4
Published before the timeframe of this review (i.e., 2004)	9
Language – not English	5
Inappropriate comparator	1
Not retrievable in full-text	2
Published before or included in one of the latest reviews	60
<b>Total excluded</b>	<b>317</b>

**Table A2.2:** Included studies.

Type of study	Number of included studies
Systematic reviews	14
Primary studies	35
<b>Total included</b>	<b>49</b>

### List of the full references of the excluded records:

2. Adnan MT, Abdel-Fattah MM, Makhdoom NK, El-Khouly AA. Does the use of radiofrequency ultrasonic dissector in tonsillectomy have a beneficial effect over the use of laser? Saudi Med J 2008; 29(12):1775-8.

published before or included in one of the latest reviews

3. Agcaoglu O, Aliyev S, Mitchell J, Milas M, Siperstein A, Berber E. The use of the harmonic scalpel versus knot tying for modified radical neck dissection. Surg Innov 2013; 20(1):81-5.

study design (study design - retrospective)

4. Ahmed HU, Hindley RG, Dickinson L et al. Focal therapy for localised unifocal and multifocal prostate cancer: a prospective development study. *Lancet Oncol* 2012; 13(6):622-32.

other application of ultrasonic energy

5. Al-Mahfoudh R, Qattan E, Ellenbogen JR, Wilby M, Barrett C, Pigott T. Applications of the ultrasonic bone cutter in spinal surgery-our preliminary experience. *Br. J. Neurosurg.* 2014; 28(1):56-60.

other application of ultrasonic energy

6. Alam M. The future of noninvasive procedural dermatology. *Semin Cutan Med Surg* 2013; 32(1):59-61.

study type (study type – narrative review)

7. Aldrighetti L, Pulitano C, Arru M, Catena M, Finazzi R, Ferla G. "Technological" approach versus clamp crushing technique for hepatic parenchymal transection: a comparative study. *J Gastrointest Surg* 2006; 10(7):974-9.

study design (study design - retrospective)

8. Aldrighetti L, Pulitano C, Catena M et al. A prospective evaluation of laparoscopic versus open left lateral hepatic sectionectomy. *J Gastrointest Surg* 2008; 12(3):457-62.

study design (study design - retrospective)

10. Alfredson H. Ultrasound and Doppler-guided mini-surgery to treat midportion Achilles tendinosis: results of a large material and a randomised study comparing two scraping techniques. *Br J Sports Med* 2011; 45(5):407-10.

other application of ultrasonic energy

11. Ali E, Saso S, Ashrafian H, Athanasiou T. Does a skeletonized or pedicled right gastro-epiploic artery improve patency when used as a conduit in coronary artery bypass graft surgery? *Interact Cardiovasc Thorac Surg* 2010; 10(2):293-8.

study design (study design - non comparative)

12. Ali NS, Ikram M, Akhtar S, Moghira I, Nawaz A, Arain A. Harmonic scalpel versus electrocautery tonsillectomy: a comparative study in adult patients. *J Pak Med Assoc* 2011; 61(3):256-9.

not retrievable in full-text

13. Aloia TA, Zorzi D, Abdalla EK, Vauthey JN. Two-surgeon technique for hepatic parenchymal transection of the noncirrhotic liver using saline-linked cautery and ultrasonic dissection. *Ann Surg* 2005; 242(2):172-7.

study design (study design - retrospective)

14. Alongi F, Russo G, Spinelli A et al. Can magnetic resonance image-guided focused ultrasound surgery replace local oncology treatments? A review. *Tumori* 2011; 97(3):259-64.

other application of ultrasonic energy

15. Anitua E, Begona L, Orive G. Two-stage split-crest technique with ultrasonic bone surgery for controlled ridge expansion: a novel modified technique. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2011; 112(6):708-10.

other application of ultrasonic energy

16. Attwood SE, Lundell L, Ell C et al. Standardization of surgical technique in antireflux surgery: the LOTUS Trial experience. *World J Surg* 2008; 32(6):995-8.

study design (study design - non comparative)

17. Attwood SE, Lundell L, Hatlebakk JG et al. Medical or surgical management of GERD patients with Barrett's esophagus: the LOTUS trial 3-year experience. *J Gastrointest Surg* 2008; 12(10):1646-54; discussion 1654-5.

not on ultrasonic energy device

19. Aydogan F, Saribeyoglu K, Simsek O et al. Comparison of the electrothermal vessel-sealing system versus endoclip in laparoscopic appendectomy. *J Laparoendosc Adv Surg Tech A* 2009; 19(3):375-8.

not on ultrasonic energy device

20. Ayodeji ID, Hop WC, Tetteroo GW, Bonjer HJ, de Graaf EJ. Ultracision Harmonic Scalpel and multifunctional tem400 instrument complement in transanal endoscopic microsurgery: a prospective study. *Surg Endosc* 2004; 18(12):1730-7.

inappropriate comparator

21. Babademez MA, Yorubulut M, Yurekli MF et al. Comparison of minimally invasive techniques in tongue base surgery in patients with obstructive sleep apnea. *Otolaryngol Head Neck Surg* 2011; 145(5):858-64.

device not specified or not of interest

22. Bachmann G. Expanding treatment options for women with symptomatic uterine leiomyomas: timely medical breakthroughs. *Fertil Steril* 2006; 85(1):46-7; discussion 48-50.

study type (study type – narrative review)

23. Banerjee A, Singh S, Tempe DK. Intraoperative endocardial ablation of chronic atrial fibrillation along with mitral valve surgery using high frequency ultrasound with a ball-tipped harmonic scalpel probe. *Indian Heart J* 2004; 56(2):178-80.

other application of ultrasonic energy

24. Bang SL, Nalachandran S. Upper limb ischaemia - a single centre experience. *Ann Acad Med Singapore* 2009; 38(10):891-3.

study design (study design - retrospective)

25. Barczynski M, Konturek A, Cichon S. Minimally invasive video-assisted thyroidectomy (MIVAT) with and without use of harmonic scalpel--a randomized study. *Langenbecks Arch Surg* 2008; 393(5):647-54.

published before or included in one of the latest reviews

26. Basu S, Kamal SA, Basu S, Kamal SA. Harmonic scalpel tonsillectomy: a prospective and randomised study. XVIII IFOS World Congress 2005; Rome.

conference abstract (no full text-available)

27. Bessa SS, Abdel-Razek AH, Sharaan MA, Bassiouni AE, El-Khishen MA, El-Kayal el-SA. Laparoscopic cholecystectomy in cirrhotics: a prospective randomized study comparing the conventional diathermy and the harmonic scalpel for gallbladder dissection. *J Laparoendosc Adv Surg Tech A* 2011; 21(1):1-5.

published before or included in one of the latest reviews

28. Bessa SS, Al-Fayoumi TA, Katri KM, Awad AT. Clipless laparoscopic cholecystectomy by ultrasonic dissection. *J Laparoendosc Adv Surg Tech A* 2008; 18(4):593-8.

published before or included in one of the latest reviews

29. Bignell MB, Ramwell A, Evans JR, Dastur N, Simson JN. Complications of transanal endoscopic microsurgery (TEMS): a prospective audit. *Colorectal Dis* 2010; 12(7 Online):e99-103.

study design (study design - retrospective)

30. Blankenship DR, Gourin CG, Porubsky EA et al. Harmonic Scalpel versus cold knife dissection in superficial parotidectomy. *Otolaryngol Head Neck Surg* 2004; 131(4):397-400.

study design (study design - retrospective)

31. Blumberg D. Is operative conversion necessary for patients diagnosed with dense adhesions during an elective laparoscopic colectomy? *Surg. Innov.* 2008; 15(3):213-8.

study design (study design - non comparative)

33. Bouwsma EV, Gorny KR, Hesley GK, Jensen JR, Peterson LG, Stewart EA. Magnetic resonance-guided focused ultrasound surgery for leiomyoma-associated infertility. *Fertil Steril* 2011; 96(1):e9-e12.

other application of ultrasonic energy

34. Bove A, Bongarzoni G, Palone G et al. Comparative study of an electrothermal bipolar vessel sealing system (LigaSure(R)), a harmonic curved shears (Harmonic Focus), and traditional technique in total thyroidectomy. *Am Surg* 2010; 76(7):E94-6.

published before or included in one of the latest reviews

35. Brauer JA, Patel U, Hale EK. Laser skin resurfacing, chemical peels, and other cutaneous treatments of the brow and upper lid. *Clin Plast Surg* 2013; 40(1):91-9.

other application of ultrasonic energy

36. Braunewell S, Gunther M, Preusser T. Toward focused ultrasound liver surgery under free breathing. *Crit Rev Biomed Eng* 2012; 40(3):221-34.

other application of ultrasonic energy

38. Burdette TE, Kerrigan CL, Homa K. Harmonic scalpel versus electrocautery in breast reduction surgery: a randomized controlled trial. *Plast Reconstr Surg* 2011; 128(4):243e-9e.

device not specified or not of interest

39. Burton Martin J, Doree Carolyn. Harmonic scalpel versus other surgical procedures for tonsillectomy. *Cochrane Database of Systematic Reviews* .

study status (study status - study protocol)

40. Cakir B, Ulmar B, Schmidt R et al. Efficacy and cost effectiveness of harmonic scalpel compared with electrocautery in posterior instrumentation of the spine. *Eur Spine J* 2006; 15(1):48-54.

study design (study design - retrospective)

41. Calo PG, Pisano G, Medas F, Tatti A, Tuveri M, Nicolosi A. The use of the harmonic scalpel in thyroid surgery. Our experience. *Ann Ital Chir* 2012; 83(1):7-12.

study design (study design - retrospective)

42. Campagnacci R, De Sanctis A, Baldarelli M et al. Hepatic resections by means of electrothermal bipolar vessel device (EBVS) LigaSure V: early experience. *Surg Endosc* 2007; 21(12):2280-4.

published before or included in one of the latest reviews

43. Campagnacci R, de Sanctis A, Baldarelli M, Rimini M, Lezoche G, Guerrieri M. Electrothermal bipolar vessel sealing device vs. ultrasonic coagulating shears in laparoscopic colectomies: a comparative study. *Surg Endosc* 2007; 21(9):1526-31.

published before or included in one of the latest reviews

44. Caporossi A, Baiocchi S, Mazzotta C, Traversi C, Caporossi T. Parasurgical therapy for keratoconus by riboflavin-ultraviolet type A rays induced cross-linking of corneal collagen. Preliminary refractive results in an Italian study. *J. Cataract Refractive Surg.* 2006; 32(5):837-45.

other application of ultrasonic energy

45. Catena F, Ansaloni L, Di Saverio S, Gazzotti F, Coccolini F, Pinna AD. The HAC Trial (Harmonic for Acute Cholecystitis) Study. Randomized, double-blind, controlled trial of Harmonic(H) versus Monopolar Diathermy (M) for laparoscopic cholecystectomy (LC) for acute cholecystitis (AC) in adults. *Trials* 2009; 10:34.

published before or included in one of the latest reviews



46. Catena F, Ansaloni L, Di Saverio S, Gazzotti F, Coccolini F, Pinna AD. Prospective analysis of 101 consecutive cases of laparoscopic cholecystectomy for acute cholecystitis operated with harmonic scalpel. *Surg Laparosc Endosc Percutan Tech* 2009; 19(4):312-6.

published before or included in one of the latest reviews

48. Cengiz Y, Dalenback J, Edlund G et al. Improved outcome after laparoscopic cholecystectomy with ultrasonic dissection: a randomized multicenter trial. *Surg Endosc* 2010; 24(3):624-30.

published before or included in one of the latest reviews

49. Cengiz Y, Janes A, Grehn A, Israelsson LA. Randomized clinical trial of traditional dissection with electrocautery versus ultrasonic fundus-first dissection in laparoscopic cholecystectomy. *Br. J. Surg.* 2005; 92(7):810-3.

published before or included in one of the latest reviews

50. Chang HL, Lim HW, Su FH, Tsai ST, Wang YW. Win or lose? Percutaneous nephrostomy for a terminal-stage cervical-cancer patient featuring obstructive uropathy. *J Palliat Care* 2006; 22(1):57-60.

study design (single-case report)

51. Chaudhary A, Negi S, Bhojwani R. Frey's procedure using the harmonic scalpel. *Surg Today* 2005; 35(3):263-4.

study design (study design - non comparative)

52. Cheng LH, Hutchison IL. Thyroid surgery. *Br J Oral Maxillofac Surg* 2012; 50(7):585-91.

study type (study type – narrative review)

53. Choi J, Raghavan M. Diagnostic imaging and image-guided therapy of skeletal metastases. *Cancer Control* 2012; 19(2):102-12.

other application of ultrasonic energy

55. Chung CC, Ha JP, Tai YP, Tsang WW, Li MK. Double-blind, randomized trial comparing Harmonic Scalpel hemorrhoidectomy, bipolar scissors hemorrhoidectomy, and scissors excision: ligation technique. *Dis Colon Rectum* .

published before the timeframe (2002)

56. Cikirikçioğlu M, Yasa M, Kerry Z et al. The effects of the Harmonic Scalpel on the vasoreactivity and endothelial integrity of the radial artery: a comparison of two different techniques. *J Thorac Cardiovasc Surg* .

study design (study design - non comparative)

57. Cionni RJ, Crandall AS, Felsted D. Length and frequency of intraoperative occlusive events with new torsional phacoemulsification software. *J. Cataract Refractive Surg.* 2011; 37(10):1785-90.

other application of ultrasonic energy

59. Cirocchi R, D'Ajello F, Trastulli S et al. Meta-analysis of thyroidectomy with ultrasonic dissector versus conventional clamp and tie. *World J Surg Oncol* 2010; 8:112.

published before or included in one of the latest reviews

60. Colen RR, Jolesz FA. Future potential of MRI-guided focused ultrasound brain surgery. *Neuroimaging Clin N Am* 2010; 20(3):355-66.

other application of ultrasonic energy

61. Collison PJ, Weiner R. Harmonic scalpel versus conventional tonsillectomy: a double-blind clinical trial. *Ear Nose Throat J* 2004; 83(10):707-10.

published before or included in one of the latest reviews

62. Connor CW, Hynynen K. Patterns of thermal deposition in the skull during transcranial focused ultrasound surgery. *IEEE Trans Biomed Eng* 2004; 51(10):1693-706.

other application of ultrasonic energy

64. Cordon C, Fajardo R, Ramirez J, Herrera MF. A randomized, prospective, parallel group study comparing the Harmonic Scalpel to electrocautery in thyroidectomy. *Surgery* 2005; 137(3):337-41.

published before or included in one of the latest reviews

65. Cortadellas T, Cordoba O, Espinosa-Bravo M et al. Electrothermal bipolar vessel sealing system in axillary dissection: a prospective randomized clinical study. *Int J Surg* 2011; 9(8):636-40.

not on ultrasonic energy device

67. Cushing S, Chiodo A, El Masri W, Smith O. The painful truth: evaluating post-operative pain in monopolar cautery vs. harmonic scalpel tonsillectomy. 61st Annual Meeting of the Canadian Society of Otolaryngology - Head & Neck Surgery (CSOHNS) .

conference abstract (no full text-available)

68. Cushing SL, Smith O, Chiodo A, Elmasri W, Munro-Peck P. Evaluating postoperative pain in monopolar cautery versus harmonic scalpel tonsillectomy. *Otolaryngol Head Neck Surg* 2009; 141(6):710-5.e1.

published before or included in one of the latest reviews

69. D'Ajello F, Cirocchi R, Docimo G et al. Thyroidectomy with ultrasonic dissector: a multicentric experience. *G Chir* 2010; 31(6-7):289-92.

published before or included in one of the latest reviews

70. da Silva FB, Limoeiro AC, Del Bianco J et al. Impact of the use of vessel sealing or harmonic scalpel on intra-hospital outcomes and the cost of thyroidectomy procedures. *Einstein (Sao Paulo)* 2012; 10(3):354-9.

study design (study design - retrospective)

71. Dai LH, Xu B, Zhu GH. Hand-assisted laparoscopic surgery of abdominal large visceral organs. *World J Gastroenterol* 2006; 12(29):4736-40.

study design (study design - non comparative)

72. Danic D, Hadzibegovic AD, Stojadinovic T, Damjanovic D, Gudelj A, Mahovne I. Harmonic scalpel surgical treatment of the tongue angioleiomyoma--case report and review of the literature. *Coll Antropol* 2012; 36 Suppl 2:167-70.

study design (single-case report)

73. de la Fuente J, Miguel-Perez MI, Balius R, Guerrero V, Michaud J, Bong D. Minimally invasive ultrasound-guided carpal tunnel release: a cadaver study. *J Clin Ultrasound* 2013; 41(2):101-7.

study design (ex vivo study)

74. de la Pena JA, Soto-Miranda MA, Lopez-Salguero JF. Ultrasonically assisted face-lift. *Aesthetic Plast Surg* 2012; 36(4):780-7.

other application of ultrasonic energy

75. Del Valle-Fernandez R, Ruiz CE. Transcatheter heart valves for the treatment of aortic stenosis: state-of-the-art. *Minerva Cardioangiol* 2008; 56(5):543-56.

not on ultrasonic energy device

76. Demirturk F, Aytan H, Caliskan AC. Comparison of the use of electrothermal bipolar vessel sealer with harmonic scalpel in total laparoscopic hysterectomy. *J Obstet Gynaecol Res* 2007; 33(3):341-5.

study design (study design - retrospective)

78. Dhepnorrarat RC, Witterick IJ. New technologies in thyroid cancer surgery. *Oral Oncol* 2013; 49(7):659-64.

study type (study type - narrative review)

80. Di Luozzo G, Moussa F, Schor J, Traad E, Williams D, Carrillo R. Harmonic scalpel for pericardiectomy: novel approach to an old cardiac dilemma. *Heart Surg Forum* 2004; 7(5):E525-7.

study design (study design - retrospective)

81. Dibidino R, Ruggeri M, Marchetti M et al. Harmonic study: A cost-effectiveness evaluation of ultrasonically activated shears for total thyroidectomy. [Italian]. *PharmacoEconomics - Italian Research Articles* .

language – not English

82. Docimo G, Ruggiero R, Gubitosi A et al. Ultrasound scalpel in thyroidectomy. Prospective randomized study. *Ann Ital Chir* 2012; 83(6):491-6.

published before or included in one of the latest reviews

83. Dokleštic K, Karamarkovic A, Stefanovic B et al. The efficacy of three transection techniques of the liver resection: a randomized clinical trial. *Hepatogastroenterology* 2012; 59(117):1501-6.

device not specified or not of interest

84. Dong X, Yang Z. High-intensity focused ultrasound ablation of uterine localized adenomyosis. *Curr Opin Obstet Gynecol* 2010; 22(4):326-30.

other application of ultrasonic energy

85. Dotai T, Coker AM, Antozzi L et al. Transgastric large-organ extraction: the initial human experience. *Surg Endosc* 2013; 27(2):394-9.

not on ultrasonic energy device

86. Druzijanic N, Pogorelic Z, Perko Z, Mrklic I, Tomic S. Comparison of lateral thermal damage of the human peritoneum using monopolar diathermy, Harmonic scalpel and LigaSure. *Can J Surg* 2012; 55(5):317-21.

irrelevant endpoint

89. El Nakeeb A, Askar W, El Lithy R, Farid M. Clipless laparoscopic cholecystectomy using the Harmonic scalpel for cirrhotic patients: a prospective randomized study. *Surg Endosc* 2010; 24(10):2536-41.

published before or included in one of the latest reviews

90. Elias WJ, Huss D, Voss T et al. A pilot study of focused ultrasound thalamotomy for essential tremor. *N Engl J Med* 2013; 369(7):640-8.

other application of ultrasonic energy

91. Engh GA, Ammeen D. Is an intact anterior cruciate ligament needed in order to have a well-functioning unicondylar knee replacement? *Clin Orthop Relat Res* 2004; (428):170-3.

not on ultrasonic energy device

92. Entezari K, Hoffmann P, Goris M, Peltier A, Van Velthoven R. A review of currently available vessel sealing systems. *Minim Invasive Ther Allied Technol* 2007; 16(1):52-7.

study type (study type - narrative review)

93. Erkut B, Unlu Y, Karapolat S et al. Comparison of harmonic scalpel and high-frequency electrocautery in radial artery harvesting. *J Cardiovasc Surg (Torino)* 2008; 49(3):371-9.

device not specified or not of interest

94. Fabiani C, Franco V, Covello F, Brambilla E, Gagliani MM. Removal of surgical smear layer. *J Endod* 2011; 37(6):836-8.

other application of ultrasonic energy

95. Fan ST. Protection of the liver during partial hepatectomy. *Hepatobiliary Pancreat Dis Int* 2004; 3(4):490-4.

study design (surgical technique)

96. Fawzy HF. Harvesting of the radial artery for coronary artery bypass grafting: comparison of ultrasonic harmonic scalpel dissector with the conventional technique. *J Card Surg* 2009; 24(3):285-9.

study design (study design - retrospective)

97. Fennessy FM, Tempany CM. A review of magnetic resonance imaging-guided focused ultrasound surgery of uterine fibroids. *Top Magn Reson Imaging* 2006; 17(3):173-9.

other application of ultrasonic energy

98. Fennessy FM, Tempany CM, McDannold NJ et al. Uterine leiomyomas: MR imaging-guided focused ultrasound surgery--results of different treatment protocols. *Radiology* 2007; 243(3):885-93.

other application of ultrasonic energy

99. Ferns SP, Sprengers ME, van Rooij WJ et al. Late reopening of adequately coiled intracranial aneurysms: frequency and risk factors in 400 patients with 440 aneurysms. *Stroke* 2011; 42(5):1331-7.

not on ultrasonic energy device

100. Fiocca R, Mastracci L, Attwood SE et al. Gastric exocrine and endocrine cell morphology under prolonged acid inhibition therapy: results of a 5-year follow-up in the LOTUS trial. *Aliment Pharmacol Ther* 2012; 36(10):959-71.

not on ultrasonic energy device

101. Fiocca R, Mastracci L, Engstrom C et al. Long-term outcome of microscopic esophagitis in chronic GERD patients treated with esomeprazole or laparoscopic antireflux surgery in the LOTUS trial. *Am J Gastroenterol* 2010; 105(5):1015-23.

not on ultrasonic energy device

102. Fischer K, Gedroyc W, Jolesz FA. Focused ultrasound as a local therapy for liver cancer. *Cancer J* 2010; 16(2):118-24.

other application of ultrasonic energy

104. Fitzgerald JE, Malik M, Ahmed I. A single-blind controlled study of electrocautery and ultrasonic scalpel smoke plumes in laparoscopic surgery. *Surg Endosc* 2012; 26(2):337-42.

irrelevant endpoint

105. Fujimoto T, Lane GJ, Teramoto H, Kameoka S, Miyano T. Evaluation of ultrasonically activated scalpel performance in pediatric laparoscopic surgery. *Pediatric Endosurgery & Innovative Techniques* .

published before the timeframe (2000)

106. Funaki K, Sawada K, Maeda F, Nagai S. Subjective effect of magnetic resonance-guided focused ultrasound surgery for uterine fibroids. *J Obstet Gynaecol Res* 2007; 33(6):834-9.

other application of ultrasonic energy

107. Furusawa H, Namba K, Thomsen S et al. Magnetic resonance-guided focused ultrasound surgery of breast cancer: reliability and effectiveness. *J Am Coll Surg* 2006; 203(1):54-63.

other application of ultrasonic energy

108. Gaida JE, Cook J. Treatment options for patellar tendinopathy: critical review. *Curr Sports Med Rep* 2011; 10(5):255-70.

other application of ultrasonic energy

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other application of ultrasonic energy

242. Mourad M, Rulli F, Robert A, Scholtes JL, De Meyer M, De Pauw L. Randomized clinical trial on harmonic focus shears versus clamp-and-tie technique for total thyroidectomy. *Am. J. Surg.* 2011; 202(2):168-74.

published before or included in one of the latest reviews

245. Msika S, Deroide G, Kianmanesh R et al. Harmonic scalpel in laparoscopic colorectal surgery. *Dis Colon Rectum* .

study design (study design - non comparative)

246. Mukhopadhaya N, De Silva C, Manyonda IT. Conventional myomectomy. *Best Pract Res Clin Obstet Gynaecol* 2008; 22(4):677-705.

other application of ultrasonic energy

248. Nieuwenhuis DH, Draaisma WA, Verberne GH, van Overbeeke AJ, Consten EC. Transanal endoscopic operation for rectal lesions using two-dimensional visualization and standard endoscopic instruments: a prospective cohort study and comparison with the literature. *Surg Endosc* 2009; 23(1):80-6.

not on ultrasonic energy device

249. Noble EJ, Smart NJ, Challand C, Sleight K, Oriolowo A, Hosie KB. Experimental comparison of mesenteric vessel sealing and thermal damage between one bipolar and two ultrasonic shears devices. *Br J Surg* 2011; 98(6):797-800.

study design (ex vivo study)

250. Nusrath MA, Postlethwaite KR. Use of piezosurgery in calvarial bone grafts and for release of the inferior alveolar nerve in sagittal split osteotomy: Technical note. *Br. J. Oral Maxillofac. Surg.* 2011; 49(8):668-9.

conference abstract (no full text-available)

251. Okada A, Morita Y, Fukunishi H, Takeichi K, Murakami T. Non-invasive magnetic resonance-guided focused ultrasound treatment of uterine fibroids in a large Japanese population: impact of the learning curve on patient outcome. *Ultrasound Obstet Gynecol* 2009; 34(5):579-83.

other application of ultrasonic energy

252. Oko MO, Ganly I, Loughran S, Clement WA, Young D, Geddes NK. A prospective randomized single-blind trial comparing ultrasonic scalpel tonsillectomy with tonsillectomy by blunt dissection in a pediatric age group. *Otolaryngology--Head and Neck Surgery : Official Journal of American Academy of Otolaryngology-Head and Neck Surgery . Otolaryngol Head Neck Surg.* 2005 Oct;133(4):579-84.

published before or included in one of the latest reviews

254. Onorati F, De Feo M, Cristodoro L et al. Can harvesting techniques modify postoperative results of the radial artery conduit? *Ital Heart J* 2005; 6(11):911-6.

not retrievable in full-text

255. Orsi F, Arnone P, Chen W, Zhang L. High intensity focused ultrasound ablation: a new therapeutic option for solid tumors. *J Cancer Res Ther* 2010; 6(4):414-20.

other application of ultrasonic energy

256. Ortega J, Sala C, Flor B, Lledo S. Efficacy and cost-effectiveness of the UltraCision harmonic scalpel in thyroid surgery: an analysis of 200 cases in a randomized trial. *J Laparoendosc Adv Surg Tech A* 2004; 14(1):9-12.

published before or included in one of the latest reviews

257. Ostapoff KT, Euhus D, Xie XJ, Rao M, Moldrem A, Rao R. Axillary lymph node dissection for breast cancer utilizing Harmonic Focus(R). *World J Surg Oncol* 2011; 9:90.

study design (study design - retrospective)

258. Oz BS, Mataraci I, Iyem H et al. Comparison of ultrasonically activated scalpel and traditional technique in radial artery harvesting: clinical research. *Thorac Cardiovasc Surg* 2007; 55(2):104-7.

device not specified or not of interest

260. Pampaloni E, Valeri A, Mattei R et al. Initial experience with laparoscopic adrenal surgery in children: is endoscopic surgery recommended and safe for the treatment of adrenocortical neoplasms? *Pediatr Med Chir* 2004; 26(6):450-9.

study design (surgical management)

261. Pampaloni F, Valeri A, Mattei R, Presenti L, Noccioli B. Experience with laparoscopic adrenalectomy in children. *Chir Ital* 2006; 58(1):45-54.

study type (study type - narrative review)

262. Papavramidis TS, Sapalidis K, Michalopoulos N et al. UltraCision harmonic scalpel versus clamp-and-tie total thyroidectomy: a clinical trial. *Head Neck* 2010; 32(6):723-7.

published before or included in one of the latest reviews

263. Parker DJ, Krupa K, Esler R, Vujovic P, Bennett IC. Use of the harmonic scalpel in thyroidectomy. *ANZ J Surg* 2009; 79(6):476-80.

study design (study design - non comparative)

264. Parsons SP, Cordes SR, Comer B. Comparison of posttonsillectomy pain using the ultrasonic scalpel, coblator, and electrocautery. *Otolaryngol Head Neck Surg* 2006; 134(1):106-13.

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265. Pasic R, Abdelmonem A, Levine R. Comparison of cervical detachment using monopolar lap loop ligature and conventional methods in laparoscopic supracervical hysterectomy. *JLS* 2006; 10(2):226-30.

not on ultrasonic energy device

267. Pektok E, Cikirikcioglu M, Engin C, Daglioz G, Ozcan Z, Posacioglu H. Does harvesting of an internal thoracic artery with an ultrasonic scalpel have an effect on sternal perfusion? *J Thorac Cardiovasc Surg*. *J Thorac Cardiovasc Surg*. 2007 Aug;134(2):442-7.

device not specified or not of interest

268. Pellegrino A, Fruscio R, Maneo A et al. Harmonic scalpel versus conventional electrosurgery in the treatment of vulvar cancer. *Int J Gynaecol Obstet* 2008; 103(2):185-8.

study design (study design - retrospective)

269. Peter B. Piezosurgery-assisted sliding genioplasty: A method for reduction of complications. Review and case report. *Eur. J. Plast. Surg.* 2010; 33(4):183-7.

other application of ultrasonic energy

270. Peterson JD, Goldman MP. Laser, light, and energy devices for cellulite and lipodystrophy. *Clin Plast Surg* 2011; 38(3):463-74, vii.

not on ultrasonic energy device

271. Phillips JM, Narula N, Deane LA et al. Histological evaluation of cold versus hot cutting: clinical impact on margin status for laparoscopic partial nephrectomy. *J Urol* 2008; 180(6):2348-52.

study design (ex vivo study)

272. Pons Y, Gauthier J, Ukkola-Pons E et al. Comparison of LigaSure vessel sealing system, harmonic scalpel, and conventional hemostasis in total thyroidectomy. *Otolaryngol Head Neck Surg* 2009; 141(4):496-501.

published before or included in one of the latest reviews

273. Potts KL, Augenstein A, Goldman JL. A parallel group analysis of tonsillectomy using the harmonic scalpel vs electrocautery. *Arch Otolaryngol Head Neck Surg* 2005; 131(1):49-51.

study design (study design - retrospective)

274. Prgomet D, Janjanin S, Bilic M et al. A prospective observational study of 363 cases operated with three different harmonic scalpels. *Eur Arch Otorhinolaryngol* 2009; 266(12):1965-70.

published before or included in one of the latest reviews

275. Rabinovici J, David M, Fukunishi H, Morita Y, Gostout BS, Stewart EA. Pregnancy outcome after magnetic resonance-guided focused ultrasound surgery (MRgFUS) for conservative treatment of uterine fibroids. *Fertil Steril* 2010; 93(1):199-209.

other application of ultrasonic energy

276. Rabinovici J, Stewart EA. New interventional techniques for adenomyosis. *Best Pract Res Clin Obstet Gynaecol* 2006; 20(4):617-36.

other application of ultrasonic energy

277. Ralii A, Camicas A, Ferron G et al. A comparative study of laparoscopic extraperitoneal lymphadenectomy. *Am J Obstet Gynecol* 2009; 201(4):370.e1-5.

study design (study design - retrospective)

278. Ragab SM. Six years of evidence-based adult dissection tonsillectomy with ultrasonic scalpel, bipolar electrocautery, bipolar radiofrequency or 'cold steel' dissection. *J Laryngol Otol* 2012; 126(10):1056-62.

device not specified or not of interest

279. Ramos FA, Ferreira RDP, Silva RHD, Prado EPd, Corso RJ, Pinto JA. Comparative study between two tonsillectomy techniques: Ultracision harmonic scalpel and traditional dissection with cold scalpel. *Revista Brasileira De Oto-Rino-Laringologia* .

language – not English

280. Rane A, Rao P, Rao P. Single-port-access nephrectomy and other laparoscopic urologic procedures using a novel laparoscopic port (R-port). *Urology* 2008; 72(2):260-3; discussion 263-4.

not on ultrasonic energy device

Rec #: 2500

281. Redwan AA. Single-working-instrument, double-trocar, clipless cholecystectomy using harmonic scalpel: a feasible, safe, and less invasive technique. *J Laparoendosc Adv Surg Tech A* 2010; 20(7):597-603.

published before or included in one of the latest reviews

282. Richter S, Kollmar O, Schuld J, Moussavian MR, Igna D, Schilling MK. Randomized clinical trial of efficacy and costs of three dissection devices in liver resection. *Br J Surg* 2009; 96(6):593-601.

device not specified or not of interest

283. Rimonda R, Arezzo A, Garrone C, Allaix ME, Giraudo G, Morino M. Electrothermal bipolar vessel sealing system vs. harmonic scalpel in colorectal laparoscopic surgery: a prospective, randomized study. *Dis Colon Rectum* 2009; 52(4):657-61.

published before or included in one of the latest reviews

284. Roth JA, Pincock T, Sacks R et al. Harmonic scalpel tonsillectomy versus monopolar diathermy tonsillectomy: a prospective study. *Ear Nose Throat J* 2008; 87(6):346-9.

published before or included in one of the latest reviews

286. Rukosujew A, Reichelt R, Fabricius AM et al. Skeletonization versus pedicle preparation of the radial artery with and without the ultrasonic scalpel. *Ann Thorac Surg* 2004; 77(1):120-5.

published before or included in one of the latest reviews

287. Salami A, Bavazzano M, Mora R, Dellepiane M. Harmonic scalpel in pharyngolaryngectomy with radical neck dissection. *J Otolaryngol Head Neck Surg* 2008; 37(5):633-7.

device not specified or not of interest

288. Salami A, Dellepiane M, Bavazzano M, Crippa B, Guastini L, Mora R. Harmonic Scalpel vs "cold knife" dissection in uvulopalatopharyngoplasty. *Am J Otolaryngol* 2010; 31(6):442-7.

device not specified or not of interest

289. Salami A, Dellepiane M, Crippa B, Mora R. A new method for osteotomies in oncologic nasal surgery: Piezosurgery. *Am. J. Otolaryngol. Head Neck Med. Surg.* 2010; 31(3):150-3.

other application of ultrasonic energy

290. Salami A, Dellepiane M, Proto E, Mora R. Piezosurgery in otologic surgery: Four years of experience. *Otolaryngol. Head Neck Surg.* 2009; 140(3):412-8.

other application of ultrasonic energy

291. Salami A, Mora R, Dellepiane M, Crippa B, Santomauro V, Guastini L. Piezosurgery(registered trademark) versus microdrill in intact canal wall mastoidectomy. *Eur. Arch. Oto-Rhino-Laryngol.* 2010; 267(11):1705-11.

other application of ultrasonic energy

292. Salami A, Mora R, Dellepiane M, Guastini L. Piezosurgery for removal of symptomatic ear osteoma. *Eur Arch Otorhinolaryngol* 2010; 267(10):1527-30.

other application of ultrasonic energy

293. Salami A, Mora R, Mora F, Guastini L, Salzano FA, Dellepiane M. Learning curve for Piezosurgery in well-trained otological surgeons. *Otolaryngol Head Neck Surg* 2010; 142(1):120-5.

other application of ultrasonic energy

294. Salomir R, Delemazure AS, Palussiere J, Rouviere O, Cotton F, Chapelon JY. Image-based control of the magnetic resonance imaging-guided focused ultrasound thermotherapy. *Top Magn Reson Imaging* 2006; 17(3):139-51.

other application of ultrasonic energy

295. Sandonato L, Soresi M, Cipolla C et al. Minor hepatic resection for hepatocellular carcinoma in cirrhotic patients: Kelly clamp crushing resection versus heat coagulative necrosis with bipolar radiofrequency device. *Am Surg* 2011; 77(11):1490-5.

not on ultrasonic energy device

296. Sanguinetti A, Docimo G, Ragusa M et al. Ultrasound scissors versus electrocautery in axillary dissection: our experience. *G Chir* 2010; 31(4):151-3.

study design (study design - retrospective)

297. Sankaranarayanan G, Resapu RR, Jones DB, Schwaitzberg S, De S. Common uses and cited complications of energy in surgery. *Surg. Endosc. Interv. Tech.* 2013; 27(9):3056-72.

study type (study type - narrative review)

298. Sartori PV, De Fina S, Colombo G et al. Ligasure versus Ultracision in thyroid surgery: a prospective randomized study. *Langenbecks Arch Surg* 2008; 393(5):655-8.

published before or included in one of the latest reviews

299. Sartori PV, De Fina S, Colombo G et al. Ligasure versus Ultracision(registered trademark) in thyroid surgery: A prospective randomized study. *Langenbeck's Arch. Surg.* 2008; 393(5):655-8.

duplicate citation

300. Sartori PV, Romano F, Uggeri F et al. Energy-based hemostatic devices in laparoscopic adrenalectomy. *Langenbecks Arch Surg* 2010; 395(2):111-4.

study design (study design - retrospective)

302. Sasi W. The outcome of laparoscopic cholecystectomy by ultrasonic dissection. *Surg Technol Int* 2010; 19:70-8.

study duplication

303. Satoi S, Yanagimoto H, Toyokawa H. Use of the new ultrasonically curved shear in pancreaticoduodenectomy for periampullary cancer. *J Hepatobiliary Pancreat Sci* 2011; 18(4):609-14.

study design (study design - retrospective)

304. Savlid M, Strand AH, Jansson A et al. Transection of the liver parenchyma with an ultrasound dissector or a stapler device: results of a randomized clinical study. *World J Surg* 2013; 37(4):799-805.

device not specified or not of interest

305. Scarano A, Murmura G, Sinjiari B et al. Expansion of the alveolar bone crest with ultrasonic surgery device: clinical study in mandible. *Int J Immunopathol Pharmacol* 2011; 24(2 Suppl):71-5.

other application of ultrasonic energy

306. Schrey A, Pulkkinen J, Fremling C, Kinnunen I. Ultrasonically activated scalpel compared with electrocautery in tonsillectomy. *ORL J Otorhinolaryngol Relat Spec* 2004; 66(3):136-40.

study design (study design - retrospective)

307. Sciubba DM, Liang D, Kothbauer KF, Noggle JC, Jallo GI. The evolution of intramedullary spinal cord tumor surgery. *Neurosurgery* 2009; 65(6 Suppl):84-91; discussion 91-2.

not on ultrasonic energy device

309. Sharma A, Muna S, Fahmy FF. The ultrasonically activated scalpel versus bipolar diathermy for tonsillectomy: a prospective randomized trial. *Clin Otolaryngol* 2005; 30(3):284; author reply 284-5.

publication type (publication type - reply)

310. Shaw A, Hodnett M. Calibration and measurement issues for therapeutic ultrasound. *Ultrasonics* 2008; 48(4):234-52.



other application of ultrasonic energy

311. Sheahan P, Miller I, Colreavy M, Sheahan JN, McShane D, Curran A. The ultrasonically activated scalpel versus bipolar diathermy for tonsillectomy: a prospective, randomized trial. *Clin Otolaryngol Allied Sci* 2004; 29(5):530-4.

published before or included in one of the latest reviews

312. Shen HP, Gong JP, Zuo GQ. Role of high-intensity focused ultrasound in treatment of hepatocellular carcinoma. *Am Surg* 2011; 77(11):1496-501.

other application of ultrasonic energy

313. Shi J, Iesaki T, Kubota N et al. Skeletonization with an ultrasonic scalpel is as safe as a non-skeletonized dissection in preserving the endothelial function of the human gastroepiploic artery. *Interact Cardiovasc Thorac Surg* 2009; 8(2):216-20.

study design (study design - non comparative)

315. Shinhar S, Scotch BM, Belenky W, Madgy D, Hauptert M. Harmonic scalpel tonsillectomy versus hot electrocautery and cold dissection: an objective comparison. *Ear Nose Throat J* 2004; 83(10):712-5.

study design (study design - retrospective)

316. Simonato A, Varca V, Esposito M, Venzano F, Carmignani G. The Use of a Surgical Patch in the Prevention of Lymphoceles After Extraperitoneal Pelvic Lymphadenectomy for Prostate Cancer: A Randomized Prospective Pilot Study. *J. Urol.* 2009; 182(5):2285-90.

not on ultrasonic energy device

317. Sindwani R, Manz R. Technological innovations in tissue removal during rhinologic surgery. *Am J Rhinol Allergy* 2012; 26(1):65-9.

study type (study type - narrative review)

318. Sipos E, Stifter E, Menapace R. Patient satisfaction and postoperative pain with different postoperative therapy regimens after standardized cataract surgery: a randomized intraindividual comparison. *Int Ophthalmol* 2011; 31(6):453-60.

other application of ultrasonic energy

319. Sista F, Schietroma M, Ruscitti C et al. New ultrasonic dissector versus conventional hemostasis in thyroid surgery: a randomized prospective study. *J Laparoendosc Adv Surg Tech A* 2012; 22(3):220-4.

published before or included in one of the latest reviews

320. Skenazy J, Ercole B, Lee C, Best S, Fallon E, Monga M. Nephrolithiasis: "scope," shock or scalpel? *J Endourol* 2005; 19(1):45-9.

study type (study type - narrative review)

321. Smart OC, Hindley JT, Regan L, Gedroyc WM. Magnetic resonance guided focused ultrasound surgery of uterine fibroids--the tissue effects of GnRH agonist pre-treatment. Eur J Radiol 2006; 59(2):163-7.

other application of ultrasonic energy

322. So MJ, Fennessy FM, Zou KH et al. Does the phase of menstrual cycle affect MR-guided focused ultrasound surgery of uterine leiomyomas? Eur J Radiol 2006; 59(2):203-7.

other application of ultrasonic energy

323. Sohn VY, Martin MJ, Mullenix PS, Cuadrado DG, Place RJ, Steele SR. A comparison of open versus closed techniques using the Harmonic Scalpel in outpatient hemorrhoid surgery. Mil Med 2008; 173(7):689-92.

study design (surgical technique)

324. Song L, Chen Z, Liu T et al. The application of a patented system to minimally invasive percutaneous nephrolithotomy. J. Endourol. 2011; 25(8):1281-6.

not on ultrasonic energy device

325. Srimurthy KR, Ramesh S. Pediatric laparoscopic surgery--Indian scenario. Indian J Pediatr 2004; 71(12):1121-6.

study type (study type - narrative review)

326. Steventon N. Early postoperative pain reduction using harmonic scalpel for tonsillectomy compared with bipolar dissection in children: a prospective randomised trial. 8th International Congress of Paediatric Otorhinolaryngology .

conference abstract (no full text-available)

327. Stewart EA, Rabinovici J, Tempany CM et al. Clinical outcomes of focused ultrasound surgery for the treatment of uterine fibroids. Fertil Steril 2006; 85(1):22-9.

other application of ultrasonic energy

328. Stumpf M, Dreuw B, Tittel A, Schumpelick V. [The short gastric vessels by using the harmonic scalpel during the laparoscopic fundoplication.]. Minimal Invasive Chirurgie .

language – not English

329. Sugo H, Matsumoto K, Kojima K, Fukasawa M, Beppu T. Role of ultrasonically activated scalpel in hepatic resection: a comparison with conventional blunt dissection. Hepatogastroenterology 2005; 52(61):173-5.

study design (study design - retrospective)

330. Szynglarewicz B, Zietek M, Forgacz J et al. Urinary complications in rectal cancer patients are related to the dissection tool. Hepatogastroenterology 2012; 59(115):724-6.

study design (study design - retrospective)

331. Takada M, Ichihara T, Kuroda Y. Comparative study of electrothermal bipolar vessel sealer and ultrasonic coagulating shears in laparoscopic colectomy. *Surg Endosc* 2005; 19(2):226-8.

published before or included in one of the latest reviews

332. Takagi K, Hata Y, Sasamoto S et al. Late onset postoperative pulmonary fistula following a pulmonary segmentectomy using electrocautery or a harmonic scalpel. *Ann Thorac Cardiovasc Surg* 2010; 16(1):21-5.

study design (study design - retrospective)

333. Takeuchi S, Futamura N, Takubo S, Noda N, Minoura H, Toyoda N. Polycystic ovary syndrome treated with laparoscopic ovarian drilling with a harmonic scalpel. A prospective, randomized study. *J Reprod Med* .

published before the timeframe (2002)

334. Tam Ka Wai, Chan Edwin SY, Chen Chieh-feng. Ligasure vessel-sealing system or harmonic scalpel versus conventional vessel ligation for thyroidectomy. *Cochrane Database of Systematic Reviews* .

study status (study status - study protocol)

335. Tan JJ, Seow Choen F. Prospective, randomized trial comparing diathermy and Harmonic Scalpel hemorrhoidectomy. *Dis Colon Rectum* .

published before the timeframe (2002)

336. Targarona EM, Balague C, Marin J et al. Energy sources for laparoscopic colectomy: a prospective randomized comparison of conventional electrosurgery, bipolar computer-controlled electrosurgery and ultrasonic dissection. Operative outcome and costs analysis. *Surg Innov* 2005; 12(4):339-44.

published before or included in one of the latest reviews

337. Tepetes K, Symeonidis D, Christodoulidis G, Spyridakis M, Hatzitheofilou K. Pudendal nerve block versus local anesthesia for harmonic scalpel hemorrhoidectomy: a prospective randomized study. *Techniques in Coloproctology* .

duplicate citation

338. Tepetes K, Symeonidis D, Christodoulidis G, Spyridakis M, Hatzitheofilou K. Pudendal nerve block versus local anesthesia for harmonic scalpel hemorrhoidectomy: a prospective randomized study. *Tech Coloproctol* 2010; 14 Suppl 1:S1-3.

irrelevant endpoint

339. Thomas MS, Kundabala M. Pulp hyperthermia during tooth preparation: the effect of rotary--instruments, lasers, ultrasonic devices, and airborne particle abrasion. *J Calif Dent Assoc* 2012; 40(9):720-31.

other application of ultrasonic energy

340. Till H, Schaarschmidt K. Partial laparoscopic decapsulation of congenital splenic cysts. A medium-term evaluation proves the efficiency in children. *Surg Endosc* 2004; 18(4):626-8.

study design (study design - non comparative)

343. Tremp M, di Summa PG, Schaakxs D et al. Is ultracision knife safe and efficient for breast capsulectomy? A preliminary study. *Aesthetic Plast Surg* 2012; 36(4):888-93.

device not specified or not of interest

344. Truong LN, Patil S, Martin SS et al. Rapid detection of high-level oncogene amplifications in ultrasonic surgical aspirations of brain tumors. *Diagn Pathol* 2012; 7:66.

study design (ex vivo study)

345. Tsimoyiannis EC, Siakas P, Glantzounis G, Koulas S, Mavridou P, Gossios KI. Seroma in laparoscopic ventral hernioplasty. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques* .

not on ultrasonic energy device

346. Tsunozuka Y, Waseda R, Yachi T. Electrothermal bipolar vessel sealing device LigaSureV for pulmonary artery ligation--burst pressure and clinical experiences in complete video-assisted thoracoscopic major lung resection for lung cancer. *Interact Cardiovasc Thorac Surg* 2010; 11(3):229-33.

not on ultrasonic energy device

348. Wada K, Nawashiro H, Arimoto H, Ohkawa H, Ono K, Takahara T. Usefulness of an ultrasonic scalpel to harvest and skeletonize the superficial temporal artery for extracranial-intracranial bypass surgery. *Neurosurgery* 2009; 65(6 Suppl):141-7; discussion 147-8.

device not specified or not of interest

350. Walker RA, Syed ZA, Walker RA, Syed ZA. Harmonic scalpel tonsillectomy versus electrocautery tonsillectomy: a comparative pilot study. *Otolaryngol Head Neck Surg* .

published before the timeframe (2001)

351. Waraich N, Ahmed J, Rashid F, Mulvey D, Leeder P, Iftikhar SY. Is harmonic scalpel an effective tool for oesophagectomy? *Int J Surg* 2009; 7(4):330-3.

study design (study design - retrospective)

352. White I, Mills JK, Diggs B, Fortino Hima J, Ellis MC, Vetto JT. Sentinel lymph node biopsy for melanoma: comparison of lymphocele rates by surgical technique. *Am Surg* 2013; 79(4):388-92.

study design (study design - retrospective)

353. White PJ. Transcranial focused ultrasound surgery. *Top Magn Reson Imaging* 2006; 17(3):165-72.

other application of ultrasonic energy

355. Wille AH, Johannsen M, Miller K, Deger S. Laparoscopic partial nephrectomy using FloSeal for hemostasis: technique and experiences in 102 patients. *Surg Innov* 2009; 16(4):306-12.

not on ultrasonic energy device

356. Willging JP, Wiatrak BJ. Harmonic scalpel tonsillectomy in children: a randomized prospective study. *Otolaryngology--Head and Neck Surgery : Official Journal of American Academy of Otolaryngology-Head and Neck Surgery* .

published before the timeframe (2003)

357. Wills E, Crawford G. Clipless versus conventional laparoscopic cholecystectomy. *J Laparoendosc Adv Surg Tech A* 2013; 23(3):237-9.

study design (study design - retrospective)

358. Witzel K, Von Rahden BHA, Stein HJ. The effect of ultrasound dissection in thyroid surgery. *Eur. Surg. Res.* 2009; 43(2):241-4.

published before or included in one of the latest reviews

359. Wright CB, Barner HB, Gao A et al. The advantages of the Harmonic Scalpel for the harvesting of radial arteries for coronary artery bypass. *The Heart Surgery Forum* .

published before the timeframe (2001)

360. Wu Z, Chen Z, Peng L. Evaluation of the harmonic scalpel in open surgery for abdominal aortic aneurysm. *Front Med* 2012; 6(1):85-8.

study design (study design - retrospective)

362. Yildirim O, Umit T, Ebru M et al. Ultrasonic harmonic scalpel in total thyroidectomies. *Adv Ther* 2008; 25(3):260-5.

published before or included in one of the latest reviews

363. Yoon SW, Lee C, Cha SH et al. Patient selection guidelines in MR-guided focused ultrasound surgery of uterine fibroids: a pictorial guide to relevant findings in screening pelvic MRI. *Eur Radiol* 2008; 18(12):2997-3006.

other application of ultrasonic energy

364. Zarebczan B, Mohanty D, Chen H. A Comparison of the LigaSure and harmonic scalpel in thyroid surgery: a single institution review. *Ann Surg Oncol* 2011; 18(1):214-8.

study design (study design - retrospective)

365. Zowall H, Cairns JA, Brewer C, Lamping DL, Gedroyc WM, Regan L. Cost-effectiveness of magnetic resonance-guided focused ultrasound surgery for treatment of uterine fibroids. *BJOG* 2008; 115(5):653-62.

other application of ultrasonic energy

**Studies suggested by reviewers from public consultation and excluded:**

366. AbulNagah G, EL-Fayoumi T, Lotfy H, Shehab W, Tarek A. Comparative study between using harmonic scalpel and electrocautery in modified radical mastectomy. *Egyptian Journal of Surgery*, 2007; 26(4)176–180.

published before or included in one of the latest reviews

367. Khater A. Harmonic scalpel as a single instrument in modified radical mastectomy. Is it more cost effective than electrocautery and ligature? *Egyptian Journal of Surgery*, 2010; 29(2)59–63.

published before or included in one of the latest reviews

368. Hata M, Shiono M, Sezai A, Iida M, Saitoh A, Hattori T, Wakui S, Soeda M, Negishi N, Sezai Y. Determining the best procedure for radial artery harvest: prospective randomized trial for early postharvest complications. *J Thorac Cardiovasc Surg*. 2005; 129(4):885-9.

published before or included in one of the latest reviews

369. Di Vita G, Patti R, Petrone R, Arcara M, Sieli G. Milligan-Morgan hemorrhoidectomy with ultrasonic scalpel [L'emorroidectomia secondo Milligan-Morgan con bisturi ad ultrasuoni]. *Il Giornale di chirurgia*, 2003; 24(11-12)422–427.

published before the timeframe (2003)

## Appendix 3 – Evidence tracking (effectiveness and safety)

**Table A3.1:** List of the 14 systematic reviews on the use of ultrasonic energy devices for surgery initially considered for analysis.

ID Study [ref.]	Timeframe of the Review		Intervention	Judgement for this review
	From	to		
Alexiou et al., 2011 [ ]	Jan, 1990	Jul, 2010	Total tonsillectomy	Included
Chirocchi et al., 2010 [ ]	No limit	Jan, 2010	Total thyroidectomy	Overlap
Contin et al., 2013 [ ]	No limit	Dec, 2012	Open partial and/or total thyroidectomy	Included
Currie et al., 2012 [ ]	1966	2011	Mastectomy for breast cancer	Included
Di Lorenzo et al., 2012 [ ]	1990	Jun, 2011	Laparoscopic colorectal surgery	Included
Ecker et al., 2010 [ ]	No limit	Nov, 2008	Different types of thyroid surgery	Overlap
Garas et al., 2013 [ ]	Jan, 2000	Jun, 2012	Thyroid surgery	Overlap
Janssen et al., 2012 [ ]	1998	Oct, 2011	Abdominal surgical procedures	Included
Lang et al., 2013 [ ]	No limit	Jul, 2012	Total thyroidectomy	Overlap
Neumann et al., 2007 [ ]	No limit	Sep, 2006	Bilateral tonsillectomy	Overlap
Patel et al., 2006 [ ]	Jan 1990	Oct 2005	Radial artery harvest	Included
Sasi, 2010 [ ]	No limit	2008 (unclear)	Laparoscopic cholecystectomy	Overlap
Tou et al., 2011 [ ]	No limit	Mar, 2010	Laparoscopic or laparosc.-assisted colectomy	Overlap
Xiong et al., 2012 [ ]	Jan, 1985	Feb, 2012	Laparoscopic cholecystectomy	Included

**Key:** *Included* = the review has been considered as the latest updated evidence on the topic; *Overlap* = the review presents overlaps with a more recent publication in terms of procedures and included studies.

**Table A3.2:** List of the 35 primary studies on the use of ultrasonic energy devices for surgery included in the evidence review.

Procedure (or group of procedures)	ID Study [ref.]	Procedure (or group of procedures)	ID Study [ref.]
Breast surgery	Cavallaro et al. 2011 [ ]	Haemorrhoidectomy and ano-rectal surgery	Abo-hashem et al. 2010 [ ]
Breast surgery	Iovino et al. 2011 [ ]	Haemorrhoidectomy and ano-rectal surgery	Boccasanta et al. 2006 [ ]
Breast surgery	Lumachi et al. 2013 [ ]	Haemorrhoidectomy and ano-rectal surgery	Chung et al. 2005 [ ]
Cardio-vascular surgery	Brazio et al. 2008 [ ]	Haemorrhoidectomy and ano-rectal surgery	Ivanov et al. 2007 [ ]
Cardio-vascular surgery	Dumantepe et al. 2011 [ ]	Haemorrhoidectomy and ano-rectal surgery	Kwok et al. 2005 [ ]
Cardio-vascular surgery	Mouton et al. 2005 [ ]	Haemorrhoidectomy and ano-rectal surgery	Ozer et al. 2008 [ ]
Cardio-vascular surgery	Mouton et al. 2011 [ ]	Haemorrhoidectomy and ano-rectal surgery	Peker et al. 2013 [ ]
ENT oncological surgery	Shin et al. 2013 [ ]	Laparoscopic cholecystectomy	Mahabaleshwar et al. 2012 [ ]
ENT oncological surgery	Walén et al. 2011 [ ]	Liver transplant. Surgery	Olmez et al. 2012 [ ]
Gastrointestinal surgery	Inoue et al. 2012 [ ]	Lung biopsy	Molnar et al. 2005 [ ]
Gastrointestinal surgery	Wilhelm et al. 2011 [ ]	Orthopaedic surgery	Tomas et al. 2010 [ ]
Gynaecological surgery	Awadzi et al. 2005 [ ]	Pancreatic surgery	Uzunoglu et al. 2012 [ ]
Gynaecological surgery	Fitz-Gerald et al. 2013 [ ]	Plastic and reconstructive surgery	Deo et al. 2004 [ ]
Gynaecological surgery	Kartsounis et al. 2011 [ ]	Plastic and reconstructive surgery	Hamahata et al. 2012 [ ]
Gynaecological surgery	Leblanc et al. 2011 [ ]	Thyroid surgery	Cirocchi et al. 2012 [ ]
Gynaecological surgery	Li et al. 2009 [ ]	Thyroid surgery	Ruggeri et al. 2012 [ ]
Gynaecological surgery	Litta et al. 2010 [ ]	Thyroid surgery	Sebag et al. 2009 [ ]
		Tonsillectomy	Khan et al. 2012 [ ]

**Key:** ENT = ear, nose, and throat.

## Appendix 4 – Quality assessment (effectiveness and safety)

**Table A4.1.** Average R-AMSTAR scores across two independent assessors of the review studies initially considered for inclusion in the present evidence review.

Authors [ref.]	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Score
Alexiou et al. []	3.5	1.0	4.0	1.5	2.0	4.0	3.0	1.5	3.5	3.0	2.5	29.5
Chirocchi et al. []	3.5	4.0	4.0	2.5	1.5	3.5	1.0	1.0	2.0	1.0	2.5	26.5
Contin et al. []	3.5	4.0	4.0	2.5	2.0	4.0	2.0	2.0	4.0	4.0	3.5	35.5
Currie et al. []	3.5	1.0	4.0	1.5	1.5	4.0	2.0	1.5	4.0	1.0	2.5	26.5
Di Lorenzo et al. []	3.5	4.0	4.0	1.0	2.5	3.5	1.0	1.0	3.5	1.0	2.5	27.5
Ecker et al. []	3.5	1.0	4.0	3.0	1.0	1.0	1.0	1.5	3.5	3.0	2.0	24.5
Garas et al. []	3.5	4.0	3.0	3.0	2.5	4.0	2.0	2.5	4.0	1.5	3.0	33
Janssen et al. []	3.5	4.0	4.0	3.0	1.5	3.5	2.0	2.0	1.0	1.5	3.0	29
Lang et al. []	3.5	3.5	4.0	2.0	3.5	3.5	1.0	1.0	2.0	3.5	1.0	28.5
Neumann et al. []	4.0	4.0	4.0	3.0	3.0	4.0	2.0	4.0	2.5	1.5	3.0	35
Patel et al. []	3.0	1.0	3.0	1.0	1.0	4.0	1.0	1.0	1.0	1.0	2.0	19
Sasi []	3.5	1.0	3.0	3.0	1.0	1.0	2.0	2.0	4.0	2.5	1.0	24
Tou at al. []	4.0	4.0	4.0	3.0	4.0	4.0	2.0	2.0	4.0	3.5	3.5	38
Xiong et al. []	3.5	4.0	4.0	2.0	2.0	3.5	3.0	2.0	4.0	3.5	2.5	34

**Table A4.2.** Quality assessment of included primary studies according to the criteria from the Cochrane Handbook for Systematic Reviews of Interventions (*adapted from: Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.0.2 [updated September 2009]. The Cochrane Collaboration. Available from www.cochrane-handbook.org 2009*). The studies are listed alphabetically according to the surgical procedure or group of procedures.

Author and study design	Random sequence generation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting	Other bias
<b>Breast surgery</b>							
Boehm 2012  RCT	<b>Low risk</b> Random number table generated sequence	<b>Low risk</b> Random number table generated sequence	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patient included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol	-



<b>Cavallaro 2011</b> CCT	<b>High risk</b> The study was not randomised.	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Low risk</b> Outcomes in the protocol were considered in the final publication.	-
<b>Iovino 2011</b> RCT	<b>Low risk</b> Randomization was performed using a series of numbered envelopes containing cards.	<b>Low risk</b> The envelopes were opened in the operating room immediately before the operation by a member of the staff who was not involved in organizing the trial.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Low risk</b> Overall, we monitored and measured 13 variables, 4 of which were discarded (with reasons).	-
<b>He 2012</b> RCT	<b>Low risk</b> Randomization by closed envelop	<b>Low risk</b> Randomization by closed envelop	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patient included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol	-
<b>Lumachi 2013</b> RCT	<b>High risk</b> The study is not randomized (randomization was performed according to the availability of the ultrasonic device).	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Yilmaz 2011</b> RCT	<b>Unclear risk</b> Randomization was achieved by consecutively enrolling pts to each group according to the pts admission time to the clinic.	<b>Unclear risk</b> Randomization was arranged sequentially	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patient included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol	-
<b>Cardio-vascular surgical procedures</b>							
<b>Brazio 2008</b> CCT	<b>High risk</b> The study was not randomised (consecutive patients were assigned to the different treatment options).	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>Low risk</b> Abnormalities on OCT were confirmed in each case by histologic findings performed by reviewers who were unaware of the harvesting method.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Dumantepe 2011</b> RCT	<b>Unclear risk</b> Consecutive patients were assigned to the different treatment options.	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-

Mouton 2005 RCT	<b>Unclear risk</b> No details on randomisation.	<b>Unclear risk</b> No details on randomisation.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Unclear risk</b> Data about all patients included in the study was reported. Follow up data available for 25 pts (69%).	<b>Unclear risk</b> Insufficient information on study protocol.	-
Mouton 2011 FUS	<b>Low risk</b> Consecutive patients were assigned to the different treatment options.	<b>Low risk</b> Patients were randomised by throwing dice.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Follow-up data collected for all patients.	<b>Unclear risk</b> Insufficient information on study protocol.	-
Shapira 2006 RCT	<b>Low risk</b> Randomization by a computer generated list	<b>Low risk</b> Computer generated random list	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patient included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol	This study was support by a research grant from CardioVations, a Johnson&Johnson company
<b>ENT surgery</b>							
Shin 2013 RCT	<b>Unclear risk</b> No details on randomisation.	<b>Unclear risk</b> No details on randomisation.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Low risk.</b> Protocol study is available and all data reported in the study.	-
Walen 2011 RCT	<b>Low risk</b> Consecutive patients were assigned to the different treatment options.	<b>Low risk</b> Subjects were assigned to either the control or experimental groups via a predetermined 6×6 block randomization.	<b>Not applicable</b>	<b>Low risk</b> Personnel measuring the secondary outcomes were blinded to the surgical technique used.	<b>Low risk</b> Exclusions from analysis were motivated (two subjects were excluded from analysis and follow-up because of protocol violations).	<b>Unclear risk</b> Insufficient information on protocol study.	-
<b>Gastrointestinal surgery</b>							
Choi 2013 RCT	<b>Low risk</b> Randomization lists were generated from an independent randomization group using a permuted block design of size four within each stratum.	<b>Low risk</b> Randomization lists were generated from an independent randomization group using a permuted block design of size four within each stratum.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patient included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol	No declaration about author's competing interests was found in the article
Inoue 2012 RCT	<b>Unclear risk</b> No details on randomisation.	<b>Unclear risk</b> No details on randomisation.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-

<b>Wilhelm 2011</b> RCT	<b>Low risk</b> A randomization list was generated separately for each participating institution in advance.	<b>Low risk</b> The randomization list was generated by block randomization. The block length was fixed before starting the investigation and was not known to the surgeons.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patients included in the study was reported. Data on follow-up reported for all patients included.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Gynaecological surgery</b>							
<b>Awadzi 2005</b> SPC	<b>Unclear risk</b> Patients were divided to one or other intervention by a randomization envelope.	<b>Unclear risk</b> No details on randomization.	<b>Not applicable</b>	<b>Low risk</b> The histopathologist was blinded.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Fitz-Gerald 2013</b> RCT	<b>Low risk</b> Randomisation by permuted blocks.	<b>Low risk</b> Opaque sealed envelopes.	<b>Not applicable</b>	<b>Unclear risk</b> When possible patients and data collectors were blinded until all data were collected.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Kartsiounis 2011</b> CCT	<b>High risk</b> The study was not randomised.	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Leblanc 2011</b> CCT	<b>High risk</b> The study was not randomised.	<b>High risk</b> <b>The study was not randomised.</b>	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Li 2009</b> RCT	<b>Low risk</b> Patients agreed to laparoscopy, were randomized into two groups.	<b>Low risk</b> Computer-generated randomized allocation schedule.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Follow-up data collected for all patients.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Litta 2010</b> RCT	<b>Low risk</b> Randomisation by computer generated block randomization numbers.	<b>Low risk</b> Sealed opaque envelopes.	<b>Not applicable</b>	<b>Unclear risk</b> The ultrasonographer that evaluated patients before interventions was unaware of treatment assessment (not relevant for the post-operative outcomes).	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Haemorrhoidectomy and ano-rectal surgery</b>							
<b>Abo-hashem 2010</b> RCT	<b>Unclear risk</b> No sufficient information about randomisation.	<b>Unclear risk</b> No sufficient information about randomisation.	<b>Not applicable</b>	<b>Unclear risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol.	-

<b>Boccasanta 2006</b> RCT	<b>Low risk</b> Patients were randomly assigned to Group 1 or Group 2 by using a computer-generated randomization list, with block size varying from four to six.	<b>Low risk</b> Sealed envelopes with a random number table.	<b>Not applicable</b>	<b>Unclear risk</b> No statement of blinding was given.	<b>Low risk</b> No patients lost in follow-up and all data reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Bulus 2012</b> RCT	<b>Unclear risk</b> No details on randomization	<b>Unclear risk</b> No details on randomization	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patient included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol	
<b>Chung 2005</b> RCT	<b>Low risk</b> Randomisation performed by blocks.	<b>Low risk</b> Sealed envelope.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Ivanov 2007</b> RCT	<b>Low risk</b> Computer generated sequence.	<b>Unclear risk</b> No allocation concealment specified.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Kwok 2005</b> RCT	<b>Low risk</b> Randomization was performed at the time of anaesthesia	<b>Low risk</b> Computer-generated list.	<b>Not applicable</b>	<b>Low risk</b> Neither the patient nor the independent assessor were aware of the technique used at operation.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Omar 2011</b> RCT	<b>Low risk</b> Randomization by a closed envelope method	<b>Low risk</b> Randomization by a simple closed envelope method	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given	<b>Low risk</b> Data about all patient included in the study was reported	<b>Unclear risk</b> Insufficient information on study protocol	No declaration about author's competing interests was found in the article
<b>Ozer 2008</b> RCT	<b>Unclear risk</b> Randomization was achieved by consecutively enrolling patients to each group according to their admission time to the clinic.	<b>Unclear risk</b> No allocation concealment specified.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-

<b>Peker 2013</b> RCT	<b>Low risk</b> Patients enrolled for the study were randomized into three groups by a computer program.	<b>Low risk</b> Code enclosed in a numbered envelope corresponding to one of the three techniques was shown to the surgeon at the beginning of the operation.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Hepatic surgery</b>							
<b>Olmez 2012</b> RCT	<b>Low risk</b> Patients were randomised in 2 groups at the beginning of surgery.	<b>Low risk</b> Throwing dice at the beginning of surgery.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Laparoscopic cholecystectomy</b>							
<b>Mahabaleshwar 2012</b> RCT	<b>Low risk</b> Patients were randomly assigned to the 2 groups before the surgery.	<b>Unclear risk</b> Envelope method.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Lung biopsy</b>							
<b>Molnar 2005</b> RCT	<b>Low risk</b> Consecutive patients were assigned to the different treatment options.	<b>Low risk</b> Patients were randomised using the dice method in one of the two pronges.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Orthopaedic surgery</b>							
<b>Tomas 2010</b> RCT	<b>Low risk</b> Consecutive patients were randomly assigned to one of each groups.	<b>Unclear risk</b> No allocation concealment specified.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Pancreatic surgery</b>							
<b>Uzunoglu 2012</b> RCT	<b>Low risk</b> Patients were randomly assigned to the 2 groups the day before the surgery.	<b>Low risk</b> Sequence generated by an online randomisation tool.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Plastic and reconstructive surgery</b>							
<b>Deo 2005</b> RCT	<b>Low risk</b> Patients were randomised in two arms after obtaining informant consent.	<b>Low risk</b> Computer-generated sequence of numbers.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Hamahata 2012</b> RCT	<b>Unclear risk</b> Patients were randomised in two groups.	<b>High risk</b> No allocation concealment specified.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Thyroid surgery</b>							

Ciocchi 2012 CCT	<b>High risk</b> The study was not randomised.	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
Ruggeri 2012 ES (from a RCT)	<b>Unclear risk</b> No mention about method of randomisation.	<b>Unclear risk</b> No mention about method of randomisation.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
Sebag 2009 ES (from a CCT)	<b>High risk</b> The study was not randomised.	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients included in the study was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-
<b>Tonsillectomy</b>							
Khan 2012 CCT	<b>High risk</b> The study was not randomised.	<b>High risk</b> The study was not randomised.	<b>Not applicable</b>	<b>High risk</b> No statement of blinding was given.	<b>Low risk</b> Data about all patients, also regarding follow-up, was reported.	<b>Unclear risk</b> Insufficient information on study protocol.	-

**Key:** CCT = controlled clinical trial; ES = economic study; FUS = follow-up study; OCT = optical coherence tomography; RCT = randomised controlled trial; SPC = same-patient comparative study.

## Appendix 5 – Search strategy – (Economic literature)

### ➤ MEDLINE (Pubmed)

DATE: 17 February 2014

LIMITS: Humans, Publication Date from 2004/01/01 to date, English and Italian

Health technology				Study design
Ultrasonic Surgical Procedures (MESH) OR Ultrasonic Surgical Procedures/economics (MESH) OR "ultrasonic surgical procedures" [Text Word] OR "ultrasound surgery" [Text Word] OR "Ultrasonic energy device" OR "surgical energy device" [Text Word] OR "Energy based devices" [Text Word]	AND	Scalpel [title/abstract] OR Shears [title/abstract] OR Coagulator* [title/abstract] OR Scissors [title/abstract]	AND	(Cost [title/abstract] AND analysis [title/abstract]) OR ("cost minimization" [title/abstract] OR CMA [title/abstract]) OR ("cost effectiveness" [title/abstract] OR CEA [title/abstract]) OR ("cost utility" [title/abstract] OR CUA [title/abstract]) OR ("health care" [Text Word] AND cost* [Text Word]) OR (economic [Text Word] AND (evaluation OR analysis OR aspect OR assessment) [Text Word]) OR "Budget Impact Analysis" [title/abstract]
OR				OR BIA [title/abstract]
Harmonic [title/abstract] OR Sonicision [title/abstract] OR SonoSurg [title/abstract] OR Thunderbeat [title/abstract] OR Ultracision [title/abstract] OR Lotus [title/abstract]				

Yield: 36

### ➤ EMBASE (Embase.com)

DATE: 17 February 2014

LIMITS: Humans, Publication Date from 2004 to date, English and Italian

Health technology				Study design
'ultrasound surgery'/exp OR 'ultrasound surgery'/exp AND 'health economics'/exp OR 'ultrasonic surgical procedures'/exp OR ('ultrasonic'/exp AND 'energy'/exp AND 'device'/exp) OR 'surgical energy device' OR 'energy based devices' OR 'energy based device'	AND	scalpel:ab,ti OR shears:ab,ti OR Coagulator*:ab,ti OR scissors:ab,ti OR dissector:ab,ti	AND	'cost analysis'/exp OR ('cost minimization':ab,ti OR cma:ab,ti) OR ('cost effectiveness':ab,ti OR cea:ab,ti ) OR ('cost utility':ab,ti OR cua:ab,ti) OR 'health care'/exp AND cost* OR (economic AND ('evaluation'/exp OR 'analysis'/exp OR aspect OR assessment)) OR ('budget impact analysis':ab,ti OR bia:ab,ti)
OR				
harmonic:dn OR Sonicision:dn OR SonoSurg:dn OR Thunderbeat:dn OR Ultracision:dn OR Lotus:dn				

Yield: 48

### ➤ Cochrane Library

Date: 17 February 2014

Health technology				Study design
MeSH descriptor: [Ultrasonic Surgical Procedures] explode all trees OR 'ultrasonic surgical procedures' OR 'ultrasound surgery' OR 'ultrasonic surgical procedures' OR ultrasonic energy device OR surgical energy device OR 'energy based devices' OR 'energy based device'	AND	scalpel:ti,ab,kw OR shears: ti,ab,kw OR Coagulator*: ti,ab,kw OR scissors: ti,ab,kw OR dissector: ti,ab,kw	AND	'cost analysis':ti,ab,kw OR ('cost minimization': ti,ab,kw OR cma) OR ('cost effectiveness': ti,ab,kw OR cea) OR ('cost utility': ti,ab,kw OR cua) OR 'health care'/exp AND cost* OR (economic AND (evaluation OR analysis OR aspect OR assessment)) OR ('budget impact analysis': ti,ab,kw OR bia)
OR				



'Harmonic Scalpel': ti,ab,kw OR Sonicision: ti,ab,kw OR SonoSurg: ti,ab,kw OR Thunderbeat: ti,ab,kw OR Ultracision: ti,ab,kw OR Lotus: ti,ab,kw		
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Yield: 23

➤ **EcoLit**

Date: 21 February 2014

ultrasonic surgical procedure OR ultrasonic surgical procedures OR OR 'ultrasound surgery' OR 'ultrasonic surgical procedures' OR ultrasonic energy device OR surgical energy device OR 'energy based devices' OR 'energy based device' OR Harmonic or Sonicision or SonoSurg or Thunderbeat or Ultracision or Lotus).mp. [mp=heading words, abstract, title, country as subject]	AND	'cost analysis':ti,ab,kw OR ( 'cost minimization': ti,ab,kw OR cma) OR ( 'cost effectiveness': ti,ab,kw OR cea) OR ( 'cost utility': ti,ab,kw OR cua) OR 'health care'/exp AND cost* OR (economic AND (evaluation OR analysis OR aspect OR assessment)) OR ( 'budget impact analysis': ti,ab,kw OR bia)
(Scalpel* or Shear* or Coagulator* or Scissor*) mp. [mp=heading words, abstract, title, country as subject]		

Yield: 0

➤ **HEED**

Date: 21 February 2014

ultrasonic surgical procedure.all data OR ultrasonic surgical procedures.all data OR ultrasound surgery).all data OR ultrasonic surgical procedures.all data ' OR ultrasonic energy device.all data OR surgical energy device.all data OR energy based devices.all data OR	AND	cost OR costs OR economic OR budget
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energy based device.all data OR (Harmonic or Sonicision or SonoSurg or Thunderbeat or Ultracision or Lotus).all data		
(Scalpel* or Shear* or Coagulator* or Scissor*) all data		

Yield: 18

**Table A5.1:** Results of the search strategy

Database	Research date	Results
MedLine	17 February 2014	36
Embase	17 February2014	48
CL EED	18 February 2014	23
EcoLIT	21 February 2014	0
Health Economic Evaluations Databases (HEED)	21 February 2014	18

## Appendix 6

### Extraction sheets – Economic studies

- Cost-effectiveness, cost-utility and cost-benefit analysis

<i>General information</i>	
Reviewer name:	
Date of extraction:	
Author/Year:	
Title:	
Journal:	
Source of funding:	
<i>Study Characteristics</i>	
Objective of study:	
Study population:	
Intervention:	
Comparator:	
<b>Economic Study Type</b>	<b>Perspective</b>
Cost-effectiveness Analysis <input type="checkbox"/>	NHS <input type="checkbox"/>
Cost-utility Analysis <input type="checkbox"/>	Societal <input type="checkbox"/>
Cost-benefit Analysis <input type="checkbox"/>	Hospital <input type="checkbox"/>
Cost-Consequence Analysis <input type="checkbox"/>	Not Stated <input type="checkbox"/>
Cost-Study <input type="checkbox"/>	Other <input type="checkbox"/>
Other (specify) <input type="checkbox"/>	
Not reported <input type="checkbox"/>	
<i>Modelling</i>	
Was a model used?	
Yes <input type="checkbox"/>	
No <input type="checkbox"/>	
If yes, state purpose and type:	
<i>Source of Data</i>	
<i>Source of effectiveness data</i>	<i>Source of Cost Data</i>
Single study <input type="checkbox"/>	Actual source (survey, direct contact, etc.) <input type="checkbox"/>
Synthesis of Previous Publication <input type="checkbox"/>	Literature source <input type="checkbox"/>

**Source of effectiveness data**

**Effectiveness data from a single study**

**Study design**

- RCT
- Non-RCT with concurrent controls
- Cohort study
- Historical control
- Before and after study
- Case series
- Other (specify)
- Not reported

**Study population**

- Number of patients in intervention group
- Number subject in control group
- Number excluded from study

**Methods of sample selection:**

**Follow-up**

- Duration of follow-up:
- Loss to follow-up:

**Number of centres:**

**Any blinding for assessment of outcomes:**

**Analysis of clinical studies:**

- Treatment completers
- Intention to treat

<b>Study inclusion criteria:</b>	<b>Study exclusion criteria reported:</b>
<b>Effectiveness results:</b>  <b>Study designs included:</b> RCT <input type="checkbox"/> Non-RCT with concurrent controls <input type="checkbox"/> Cohort study <input type="checkbox"/> Historical control <input type="checkbox"/> Before and after study <input type="checkbox"/> Case seies <input type="checkbox"/> Other <input type="checkbox"/> Not reported	<b>Number of primary studies included:</b>
<b>Sources searched reported:</b>	<b>Method of combination of primary study:</b>
<b>Criteria used to judge validity:</b> Concealment of randomisation <input type="checkbox"/> Blind assessment <input type="checkbox"/> Low drop out rates <input type="checkbox"/> Other (specify) <input type="checkbox"/> Not reported <input type="checkbox"/>	Meta-analysis <input type="checkbox"/> Narrative methods <input type="checkbox"/> Other (specify) <input type="checkbox"/>
<b>Results of the review (Effectiveness results):</b>	
<b><i>Economic evaluation</i></b>	
Measures of Benefits used in the Economic Analysis	
yes <input type="checkbox"/>	
no <input type="checkbox"/>	
If yes, specify:	
Side effect considered	
yes <input type="checkbox"/>	
no <input type="checkbox"/>	
<b>Direct costs: Health service</b>	
Estimation based on:	
A guess <input type="checkbox"/>	
Actual data <input type="checkbox"/>	
Derived using Modelling <input type="checkbox"/>	
Other <input type="checkbox"/>	
Not reported <input type="checkbox"/>	

<b>Direct costs: Patients</b> Estimation based on: A guess <input type="checkbox"/> Actual data <input type="checkbox"/> Derived using Modelling <input type="checkbox"/> Other <input type="checkbox"/> Not reported <input type="checkbox"/>	
<b>Source of Direct costs Data:</b>  <b>Price Year:</b>  <b>Currency:</b>	<b>Discounting Undertaken?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> <b>Discount rate:</b>
<b>Indirect costs:</b> Estimation based on: A guess <input type="checkbox"/> Actual data <input type="checkbox"/> Derived using Modelling <input type="checkbox"/> Other <input type="checkbox"/> Not reported <input type="checkbox"/>	
<b>Source of Indirect costs Data:</b>  <b>Price Year:</b>  <b>Currency:</b>  <b>Conversion rates used:</b>	<b>Discounting Undertaken?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> <b>Discount rate:</b>
<b><i>Statistical / sensitivity analyses</i></b>	
Statistical tests carried out?  yes <input type="checkbox"/> no <input type="checkbox"/>	Types of tests used in analysis of costs:
<b>Type of sensitivity analysis</b> One-way analysis <input type="checkbox"/> Two-way analysis <input type="checkbox"/> Multi-way analysis <input type="checkbox"/> Threshold analysis <input type="checkbox"/> Analysis of Extremes <input type="checkbox"/> Probabilistic analysis <input type="checkbox"/> Not reported <input type="checkbox"/> Not carried out <input type="checkbox"/> Other:	<b>Areas of uncertainty tested:</b>

<i>Results of study</i>	
<b>Clinical Outcome/Benefit:</b>	
Duration of benefits	
<b>Costs results:</b>	
<b>Cost of adverse events considered</b>	
yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Not relevant	<input type="checkbox"/>
<b>How were the estimates of costs and benefits combined?</b>	
Cost-Life saved	<input type="checkbox"/>
Cost/Life gained	<input type="checkbox"/>
Cos/QALY	<input type="checkbox"/>
Not benefit	<input type="checkbox"/>
Incremental net benefit	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not combined	<input type="checkbox"/>
<b>Results of Synthesis of costs and benefits:</b>	
<b>Author's conclusion:</b>	
<b>Reviewer's conclusion:</b>	
<b>Overall assessment of study quality (CHEERS):</b>	

Adapted from Bamford J, et al. Current practice, accuracy, effectiveness and cost-effectiveness of the school entry hearing screen. *Health Technol Assess* 2007;11(32).

- **Cost-analysis**

Study ID	Comparison	Costs				Source	Economic results
		Item					
		Type	Device	Value			



## Appendix 7

### Excluded studies

#### List of excluded studies with reasons for exclusion

##### No technology:

Savlid, M.; Strand, A. H.; Jansson, A.; Agustsson, T.; Soderdahl, G.; Lundell, L., and Isaksson, B. Transection of the liver parenchyma with an ultrasound dissector or a stapler device: results of a randomized clinical study (Provisional abstract). *World Journal of Surgery*. 2013; 37(4):799-805.

##### No comparator:

Chang, L. Y.; O'Neill, C.; Suliburk, J.; Sidhu, S.; Delbridge, L., and Sywak, M. Sutureless total thyroidectomy: a safe and cost-effective alternative. *ANZ J Surg*. 2011 Jul-2011 Aug 31; 81(7-8):510-4.

Suo, G. and Xu, A. Clipless minilaparoscopic cholecystectomy: A study of 1096 cases. *J. Laparoendosc. Adv. Surg. Techn*. 2013; 23(10):849-854.

Yung, E.; Gagner, M.; Pomp, A.; Dakin, G.; Milone, L., and Strain, G. Cost comparison of reusable and single-use ultrasonic shears for laparoscopic bariatric surgery. *Obes. Surg*. 2010; 20(4):512-518.

##### No study design:

Cirocchi, R.; D'Ajello, F.; Trastulli, S.; Santoro, A.; Di Rocco, G.; Vendettuoli, D.; Rondelli, F.; Giannotti, D.; Sanguinetti, A.; Minelli, L.; Redler, A.; Basoli, A., and Avenia, N. Meta-analysis of thyroidectomy with ultrasonic dissector versus conventional clamp and tie. *World J. Surg. Oncol*. 2010; 8.

Huang, Y.; Mu, G. C.; Qin, X. G.; Lin, J. L.; Liu, C.; Chen, Z. B., and Zeng, Y. J. The application of ultrasonic harmonic scalpel in the radical surgery of gastric cancer (Provisional abstract). *Clinical and Translational Oncology*. 2013; 15(11):932-937.

Sasi, W. Dissection by ultrasonic energy versus monopolar electrosurgical energy in laparoscopic cholecystectomy. *JSLs*. 2010 Jan-2010 Mar 31; 14(1):23-34.

Sileshi, B.; Achneck, H.; Ma, L., and Lawson, J. H. Application of energy-based technologies and topical hemostatic agents in the management of surgical hemostasis. *Vascular*. 2010; 18(4):197-204.

Hartl, D.-M. The place of new haemostatic techniques in thyroid surgery. *Eur. Ann. Otorhinolaryngol. Head Neck Dis*. 2011; 128(4):200-202.

Neumann, C.; Street, I.; Lowe, D., and Sudhoff, H. Harmonic scalpel tonsillectomy: a systematic review of evidence for postoperative hemorrhage (Structured abstract). *Otolaryngology - Head and Neck Surgery*. 2007; 137(3):378-384.

Wright, C. Invited commentary. *Ann. Thorac. Surg.* 2007; 84(6):2080.

**No date range:**

Meurisse, M.; Defechereux, T.; Maweja, S.; Degauque, C.; Vandelaer, M., and Hamoir, E. [Evaluation of the Ultracision ultrasonic dissector in thyroid surgery. Prospective randomized study]. *Annales De Chirurgie.* 2000; 125(5):468-72.

Erian M, McLaren G R Buck R J Wright G. Reducing costs of laparoscopic hysterectomy. 1999; 6:471-475.

Lirici M M, Di Paola M Ponzano C Huscher C G S. Combining ultrasonic dissection and the Storz operation rectoscope. 2003; 17:1292-1297.

Ohtsuka T, Wolf R K Wurnig P Park S E. Thoracoscopic limited pericardial resection with an ultrasonic scalpel. 1998; 65:855-856.

Richards S R, Simpkins S. Comparison of the harmonic scissors and endostapler in laparoscopic supracervical hysterectomy. 1995; 3(1):87-90.

Underwood R A, Dunnegan D L Soper N J. Prospective, randomized trial of bipolar electrocoagulation vs ultrasonic coagulation for division of short gastric vessels during laparoscopic Nissen fundoplication. 1999; 13:763-768.

**No preliminary results:**

Lombardi, C. P.; Raffaelli, M.; Cicchetti, A.; Marchetti, M.; De Crea, C.; Di Bidino, R.; Oragano, L., and Bellantone, R. The use of "harmonic scalpel" versus "knot tying" for conventional "open" thyroidectomy: results of a prospective randomized study. *Langenbecks Arch Surg.* 2008 Sep; 393(5):627-31.

**No duplicate:**

Dibidino, R.; Ruggeri, M.; Marchetti, M.; Lombardi, N.; Raffaelli, M.; Attina, G., and Cicchetti, A. Harmonic study: A cost-effectiveness evaluation of ultrasonically activated shears for total thyroidectomy. [Italian]. *PharmacoEconomics - Italian Research Articles.* 2010; 12(3):143-155.