

## Online Supplemental Material

**Supplemental Table 1. Characteristics of Included Studies**

Source	Condition	N Total Entered (Treatment/ Control)	Treatment	Sham Treatment	Concealment	Outcome for Main Analysis	Author Conclusions
<b>PAIN</b>							
Sutton et al,1994[46] Sutton et al,1997[45]	endometriosis	T32/ C 31	laparoscopic laser treatment of endometriosis	diagnostic laparoscopy with three incisions in the same locations as the active treatment and the removal of the serosanguinous fluid from the Pouch of Douglas to perform an inspection of the pelvic peritoneum	Unclear	patients with pain improvement at 6 months ‡	(+)
Abbott et al, 2004[42]	endometriosis	T 20/ C 19	laparoscopic excision of endometriosis tissues	diagnostic laparoscopic procedure with no laparoscopic excision of endometriosis tissues -(delayed surgery)	Adequate	overall pain reduction at 6 months †	(+)
Jarrell et al,2005[44] Jarrell et al, 2007[43]	endometriosis	T 8/ C 7	laparoscopy biopsy and excision	three incisions and a biopsy but no tissue excision	Adequate	§	(+)
Leclaire et al, 2001[27]	low back pain (> 3 months)	T 36/ C 34	percutaneous radiofrequency articular denervation done under fluoroscopic guidance	the same procedure without denervation	Adequate	change of Roland-Morris questionnaire score at 12 weeks *	0

Van Kleef et al, 1999[29]	chronic low back pain	T 15/ C 16	radiofrequency lumbar facet denervation (60-second radiofrequency lesion at 80 C of the medial branch of the posterior primary ramus of the segmental nerves L3–L5 on one or on both sides)	sham denervation where electrodes were introduced as in the active treatment but no radiofrequency lesion was made	Unclear	VAS pain score at 8 weeks †	(+)
Nath et al, 2008[28]	chronic low back pain	T 20/ C 20	percutaneous radiofrequency neurotomy	identical procedure except no current was used and the electrode tip remained at body temperature	Unclear	global improvement for back pain according to VAS at 6 months †	(+)
Freeman et al, 2005[26]	chronic discogenic low back pain	T 38/ C 19	positioning of IDET catheter and delivering of electrothermal energy	positioning of the IDET catheter without delivering electrothermal energy	Unclear	Low back pain outcome score (LBOS) at 6 months †	0
Buchbinder et al, 2009[12]	painful osteoporotic vertebral fractures	T 38/ C 40	vertebroplasty	same procedures up to the insertion of the 13-gauge needle to rest on the lamina. The central sharp stylet was then replaced with a blunt stylet. To simulate vertebroplasty, the vertebral body was gently tapped, and polymethylmethacrylate was prepared so that its smell permeated the room.	Adequate	overall pain score at 3 months *	0

Kallmes et al, 2009[13]	painful osteoporotic vertebral fractures	T 68/ C 63	vertebroplasty	simulated procedure without cement where methacrylate monomer was opened to simulate the odor associated with PMMA mixing but needles were not placed nor PMMA infused	Adequate	RDQ (Roland-Morris disability score) at 1 month †	0
Patel et al, 2012[30]	chronic sacroiliac joint pain	T 34/ C 17	lateral branch neurotomy using cooled radiofrequency	sham neurotomy where the treatment was identical, except that radiofrequency energy was not delivered.	Unclear	comparison of mean change from baseline in NRS pain score between treatment and sham groups at the 3-month follow-up time-point *	(+)
Cobb, 1959[34]	angina pectoris	T 8/ C 9	ligation of the internal mammary arteries after they had been isolated	sham ligation of the internal mammary arteries after they had been isolated	Unclear	subjective improvement in angina >40% ‡	0
Dimond, 1960[35]	angina pectoris	not stated	ligation of internal mammary artery	sham ligation (skin incision with exposure of the internal mammary arteries with no ligation)	Unclear	>=50% subjective improvement ‡	0
Salem et al, 2004[38] Salem et al, 2005[37]	angina pectoris	T 40/ C 42	Percutaneous Myocardial Laser Revascularization (PMLR) plus optimal medical therapy	sham procedure involving the laser catheter being inserted but connected to a hidden lead box plus optimal medical therapy	Adequate	mean Canadian Cardiovascular Society angina (CCS) class at 12 months ‡	(+)

Leon, et al, 2005[36]	angina pectoris	T 196/ C 102	Biosense direct myocardial revascularization (DMR) with laser catheter introduced and advanced to the left ventricular (LV)	the laser (already in the room) was turned on but no further procedure was performed	Unclear	exercise treadmill duration at 6 months *	0
Moseley et al, 1996[32]	arthritis	Lavage: 3/ Debridement: 2/ C 5	arthroscopic débridement or arthroscopic lavage	patients undergoing placebo arthroscopy were prepared, draped, examined, and injected with local anesthetic in the same manner as the other two groups. Three stab wounds were made in the skin with a scalpel, but no instruments of any kind were placed into the knee	Unclear	a "strongly agree" response to question "Do you feel the operation was worthwhile?" ‡	(-)
Moseley et al, 2002[11]	arthritis	Lavage: 61/ Debridement: 59/ C 60	arthroscopic débridement or arthroscopic lavage	as described above	Adequate	KSPS (knee-specific pain scale) at 24 months *	0
Bradley et al, 2002[31]	arthritis	T 89/ C 91	arthroscopic knee irradiation	sham irradiation (needle was advanced to, but not through, the joint capsule)	Unclear	WOMAC function score (Western Ontario and McMaster Universities Osteoarthritis Index) at 52 weeks †	(-)
Sihvonen et al., 2013[33]	arthritis	T 70/ C 76	arthroscopic partial meniscectomy	a standard arthroscopic partial meniscectomy was simulated with sham surgery	Adequate	the Lysholm knee score at 12 mos after surgery *	0
Dowson et al, 2008[49]	migraine with aura	T 74/ C 73	Patent foramen ovale (PFO) closure with the STARFlex septal repair implant	a sham procedure (skin incision in the groin only)	Adequate	migraine attacks/month at 4-6 months †	0

Guyuron et al, 2009[50]	migraine headache	T 49/ C 26	Surgery in the predominant trigger sites (frontal (F), temporal (T) and occipital (O)) with endoscopic removal of the glabellar muscles encasing the supraorbital and supratrochlear nerves, removal of a segment of the zygomaticotemporal branch of the trigeminal nerve, and removal of the greater occipital nerve	sham surgery with exposure of the muscles and nerves through a similar incision but the integrity of the structures was maintained	Adequate	change in frequency of migraine attacks at 12 months †	(+)
Geenen et al, 1989[47]	cholia	T 23/ C 24	endoscopic sphincterotomy	sham sphincterotomy was performed exactly as was the true sphincterotomy except that the sphincterotome was positioned in the duodenal lumen during activation of the electrocautery unit	Unclear	patients with "good" symptom scores at 12 months ‡	(+)
Toouli et al, 2000[48]	cholia	SO stenosis: Sham 13/ Endoscopic sphincterotomy (ES) 13/ SO dyskinesia: sham 10/ ES 11/ Normal manometry: Sham 19/ ES 13	endoscopic sphincterotomy (ES)	endoscopy with introduction of a papillotome into the duodenum after which the "noises" of sphincterotomy were created	Unclear	improvement in abdominal pain at 24 months ‡	(+)

Cote et al, 2012[39]	painful pancreatic sphincter dysfunction	T 11/ C 9	biliary endoscopic sphincterotomy (BES)	sham endoscopy (not described)	Adequate	patients with two or more distinct episodes of acute pancreatitis at follow up evaluation ‡	0
Boelens et al, 2013[40]	painful anterior cutaneous nerve entrapment syndrome	T 22/ C 22	Neurectomy of the intercostal nerve endings at the level of the abdominal wall	Sham surgery with the exposure to the abdominal wall and then closed with no further surgical procedure	Adequate	patients achieving a minimal 50% improvement in pain perception measured using a VAS ‡	(+)
Swank et al, 2003[41]	chronic abdominal pain and adhesions	T 52/ C 48	Laparoscopic adhesiolysis	diagnostic laparoscopy only	Adequate	pain relief after one year using a VAS *	0
Davys et al, 2005[83]	plantar callosities in rheumatoid arthritis	T 19/ C 19	normal callus treatment (NCT) comprised of sharp scalpel debridement of the callosity	NCT was simulated by the podiatrist using a bluntedged scalpel such that no callus tissue was debrided	Adequate	forefoot pain §	0
<b>Obesity</b>							
Lindor et al, 1987[53]	obesity	T 11/ C11	intragastric balloon placed	an empty introducer tube was inserted, its position was confirmed fluoroscopically and 200 ml of air was pumped into the stomach	Unclear	weight loss at 2-3 months †	0
Meshkinpour et al, 1988[60]	obesity	T 21/ C 21	the Garren-Edwards gastric bubble inserted	insertion of an unloaded introducer tube after having modified the slit and simulation of the bubble inflation process	Unclear	weight loss at 12 weeks †	0

Mathus-Vliegen et al, 1990[55]	obesity	T 14/ C 14	four treatment combinations were compared: group A: balloon-sham; group B: sham-balloon; group C balloon-balloon; and group D: sham-sham. the treatment included two periods of each of balloon or sham therapy for 4 months	sham groups involved insertion of a balloon where the balloon was empty	Unclear	weight loss at 1-17 weeks †	0
Rigaud et al, 1995[61]	obesity	T 11/ C 9	endoscopic air filled balloon insertion	sham involved empty balloon insertion	Unclear	weight †	0
Mathus-Vliegen et al, 1996[59]	obesity	T 8/ C 9	endoscopic balloon insertion	empty balloon insertion	Unclear	weight at 4 months †	0
Mathus-Vliegen et al, 2002[56]	obesity	T 20/ C 23	endoscopic balloon insertion	empty balloon insertion	Unclear	weight at 13 weeks †	0
Mathus-Vliegen et al, 2003[58]	obesity	T 11/ C 17	endoscopic balloon insertion	empty balloon insertion	Unclear	weight at 13 weeks †	0
Genco et al, 2006[51]	obesity	T 16/ C 16	endoscopic balloon insertion	endoscopic examination in sedated patients but no balloon insertion in the first 3 months of treatment	Unclear	body mass index †	(+)
Gersin et al, 2010[52]	obesity	T 21/ C 26	endoscopic insertion of a duodenojejunal bypass liner (DJBL)	conscious sedation during which an EGD and a mock procedure were performed	Unclear	percentage of excess weight loss at 12 weeks *	(+)

Mathus-Vliegen et al, 2005[57]	treatment-resistant obesity	T 12/ C 21	the placement assembly consisted of a sheath with the collapsed balloon and a balloon fill tube	the collapsed balloon was not present in the assembly but otherwise mimicked the balloon procedure	Adequate	§	0
Martinez-Brocca et al, 2007[54]	treatment-resistant obesity	T 11/ C 11	endoscopic balloon insertion	insertion of a deflated balloon	Unclear	weight at 12 weeks †	(+)
<b>GERD</b>							
Corley et al, 2003[62]	GERD	T 35/ C 29	radiofrequency energy delivery to the gastroesophageal junction at each deployment position	balloon inflation at each deployment position without needle deployment or energy delivery	Adequate	heartburn score at 6 months †	(+)
Deviere et al, 2005[63]	GERD	T 32/ C 32	endoscopic implantation of a biocompatible nonresorbable copolymer	diagnostic upper endoscopy only	Adequate	GERD-HRQL heartburn score reduction at 3 months †	(+)
Montgomery et al, 2006[64]	GERD	T 22/ C 24	gastric plication with endoscopical placement of two to four sutures	endoscopy with patient anaesthetized for approximately 40 min (corresponding to the time needed to perform the real procedure)	Adequate	GSRS gastrointestinal symptom rating scale at 3 months †	0



Rothstein et al, 2006[65]	GERD	T 72/ C 72	gastric plication with endoscopic placement of one sutures	The sham procedure mimicked the treatment procedure through the positioning of the plicator but with no sutures placed	Adequate	GERD-HRQL (health-related quality of life) at 3 months †	(+)
Schwartz et al, 2007[66]	GERD	T 20/ C 20	endoscopic gastroplication along the lesser curvature and greater curvatures	the sham procedure was carried out using the same equipment, but without the suturing needle and thread loaded	Adequate	heartburn score at 3 months †	(+)
<b>Parkinson's</b>							
Freed et al, 2001[67] Nakamura et al, 2001[72] Greene et al, 2002[69] McRae et al, 2003[70] McRae et al, 2004[71] Gordon et al, 2004[68]	parkinson's disease	T 20/ C 20	deep brain implantation of embryonic dopamine neurons	identical procedure except that the dura mater was not penetrated after the twist-drill holes had been made in the frontal bone	Unclear	§	0
Olanow et al, 2003[73]	parkinson's disease	T 23/ C 11	bilateral fetal nigral transplantation into the brain	treated in an identical manner except that partial burr holes that did not penetrate the inner table of the skull, no needles were inserted and no tissue was implanted	Unclear	UPDRS motor score (Unified Parkinson's Disease Rating Scale) at 24 months *	0
<b>Other</b>							

Curran, 1966[80] Curran, 1971[79]	asthma	T 10/ C 13	standard glomectomy procedure	sham glomectomy in which the carotid bifurcation was only exposed and subcutaneous tissue was sent to the pathologist	Unclear	physician's opinion of "definite" improvement at 6 months ‡	0
Thomsen et al, 1983[86] Bretlau et al, 1984[82] Thomsen,1981 [85] Thomsen,1986 [87]	meniere's disease	T 15/ C 15	regular endolymphatic sac shunt operation with insertion of silastic into the sac draining out into the mastoid cavity	mastoidectomy with care was taken not to remove the bone over the endolymphatic sac in order to avoid a decompression	Unclear	investigator's evaluation of operative effect: "good effect" at 12 months ‡	(-)
Winters, 1984[88]	dilated esophagus	T 8/ C 8	bougienage (dilatation of esophagus) with a 54 F bougie	sham bougienage using a 24 F bougie	Unclear	chest pain score at 2 weeks †	0
Larson et al, 1998[84]	Benign Prostatic Hyperplasia (BPH)	T 125/ C 44	high efficiency microwave thermoablation	same procedure except without microwave power and coolant temperature was increased in increments from 8 to 20°C over the same time period as in the microwave group	Unclear	AUA score (American urological association) at 6 months †	(+)
Slusser et al, 1998[77]	dry eye	T 28/ C 28	Herrick lacrimal plugs were inserted into both canaliculi of one previously randomized eye	manipulation of eye without insertion of Herrick lacrimal plugs	Unclear	subjective dryness of eye (VAS) at 5 weeks †	(+)
Geldis et al, 2008[76]	dry eye	T 19/ C 19	insertion of punctal plug	tissue manipulation producing the same sensation to the eye with no plug insersion	Unclear	contact lens dry eye questionnaire (CLDEQ) score at 6 weeks †	0

Friedman et al, 2008[74]	sleep apnea	T 31/ C 31	palatal implant insertion	identical procedure with no insertion of palatal implants	Adequate	reduction in AHI (apnoea/hypopnoea index) at 95 days *	(+)
Koutsourelakis et al, 2008[75]	sleep apnea	T 27/ C 22	standard submucosal resection of the nasal septum	nasal tissue manipulation simulating the operation but with no resection of the nasal septum	Unclear	reduction in AHI (apnoea/hypopnoea index) at 3-4 months †	0
Bajbouj et al, 2009[81]	globus	T 11/ C 10	endoscopy performed and APC therapy applied	after endoscopy, patients were connected with APC applicator but current flow was disconnected as soon as patients were asleep	Adequate	patients with overall symptom improvement (yes or no) at 3 months ‡	(+)
Castro et al., 2009[79]	asthma	T 190/ C98	bronchoscopy with bronchial thermoplasty	bronchoscopy, which mimicked thermal bronchoplasty	Adequate	asthma quality of life (AQLQ) score, average of 6, 9 and 12 weeks †	(+)
Rodriguez et al, 2009[89]	Type II diabetes	T 12/ C 6	endoscopic insertion of a duodenal-jejunal bypass liner (DJBL)	sham endoscopy	Unclear	improvement in glycemic control as measured by HbA1c change from baseline to week 12 *	(+)

\* primary main outcome measure used; † most important outcome measure used; ‡ only responder data available, not used in main analysis; § insufficient data to include in meta-analysis

author conclusions: (+) favors intervention, (0) no benefit, (-) favors placebo or "placebo effect noted in author conclusions"

T: real treatment; C: sham control