

PRE-KLINIKAI-KLINIKAI TRANSZLÁCIÓ

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Dokumentumot készítette:

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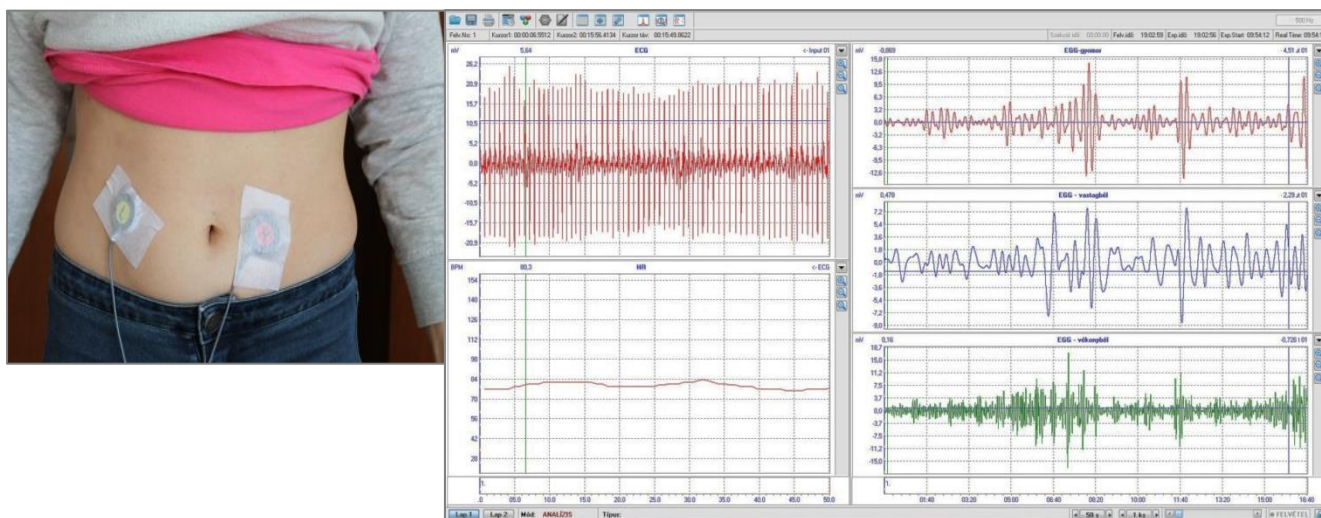
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Bevezetés

A projekten belül megvalósuló két mérőrendszer innovációs újdonsága, hogy a hagyományos kardiovaszkuláris őrzés kiegészül a gasztrointesztinális régió figyelésével. Az új fiziológiás paraméter (gasztrointesztinális) beiktatása a megfigyelésbe egy megoldatlan, de a beteg állapotát jelentősen befolyásoló koros jelenséget – a paralitikus ileusz – kvantitatív észlelését teszi lehetővé.

E paraméter diagnosztikai alkalmazása lényeges transzlációs fejlesztési folyamatot involvál, amely folyamat a preklinikai alap kutatás eredményei alapján folytatódott (folyik) a klinikai fejlesztésben. A jelen fejlesztést megelőzően a projektben résztvevő tudásközpontok és vállalkozások (HOGYI, MSB-MET Kft. ADWARE R. Kft.) közel 10 éve folytatnak kutatásokat a régió fiziológiás működését jellemző mioelektrikus hullámok (EGIG) diagnosztikai alkalmazásának lehetőségeinek feltárása érdekében. E tárgykörben az elmúlt években lefolytatott preklinikai vizsgálatok eredményit publikáltuk [pl. J Pharmacol Toxicol Methods. 2016; 82:37-44.; Croat Med J. 2017; 58(2):141-148., Life Sciences 205 (2018):1-8].

Ezen eredmények alapján valósítottuk meg az első transzlációs folyamatot a „Reflux” noninvazív diagnosztikájának megvalósítása érdekében. E fejlesztés jelentős hozadéka a – preklinikai tapasztalatok figyelembe vételével – az alkalmazott szenzorok és ezek testfelszíni - szükségsszerű 24 órás rögzítésének – tapasztalatai. Továbbá a leképzett eltérő frekvenciájú hullámok (EKG/EGIG stb.) egyidejű valós időben (real time) történő megjelenítése és értékelése. A leglényegesebb tényező azon szűrési eljárások kidolgozása és validálása, amelyek lehetővé tették az egyes GI szervek (gyomor vékonybél, vastagbél) hullámspektrumainak szétválasztását, amely lehetővé tette a részletesebb hatásmechanizmus vizsgálatot (ld. ábra).



Fájlnév: Preklinikai_klinikai_transzláció

Transzlációs medicina hatásvizsgálat

Systematic search:

4 adatbázisban 2 domain-es keresőkulccsal. 661 össztalálat.

	MEDLINE	Scopus	Embase	Central
"postoperative" OR "post operative" OR "post-operative" OR "surgery" OR "operation" OR "laparoscopic" OR "operate"	2.009.045	5.591.592	2.651.130	305.346
AND				
"electrogastrography" OR "electrogastrograph" OR "electrogastrogram" OR "gastrography" OR "gastrograph"	1.051	2.000	1.450	249
	107	305	167	32
			overall	611

Selection:

Absztrakt szelekció során talált:

- 11 intervenciós vizsgálat
- 45 obszervációs vizsgálat
- 1 áttekintő közlemény
- 0 metaanalízis

Intervenciók a 11 intervenciós vizsgálat esetében

- 3 cikkben akupunktúra/elektroakupunktúra
- 2 kínai gyógynövény keverék
- 1 'serosal electric stimulation'
- 1 általános anesztéziát kiegészítő epidurális anesztézia
- 1 erythromycin
- 1 itopride hydrochloride.

Cikkek száma műtét-típusonként:

- GI
 - Gyomor 21
 - Nyelőcső 10
 - Epehólyag 6

- Többféle GI műtét 5
- Többféle hasi műtét 3
- Ortopédia 2
- Agy 1
- Császármetszés 1
- Tüdő 1
- Aorta 1
- Többféle műtét 5

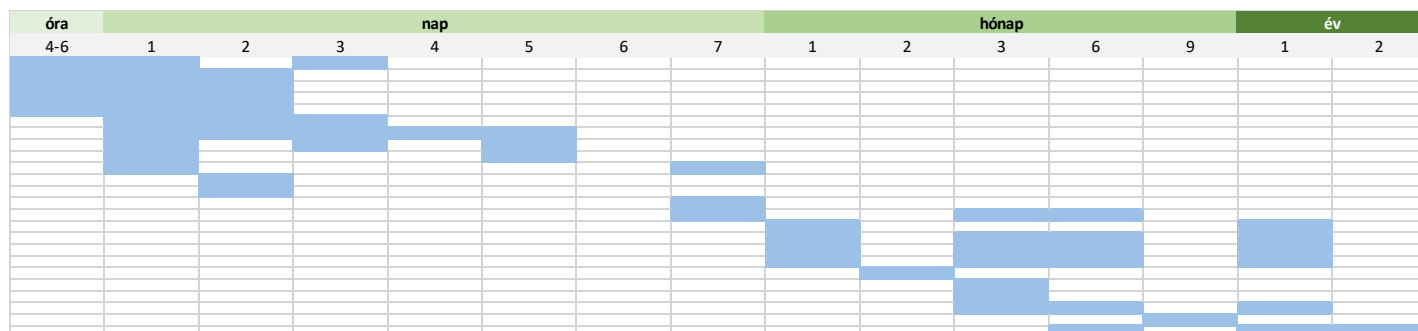
	• 0-9	1
	• 10-19	13
	• 20-29	17
Cikkek száma beválogatott betegenként:	• 30-39	6
	• 40-49	11
	• 50-59	4
	• 60-	2

Vizsgált EGG paraméterek:

- frequency of the ~3 cpm component (normo-, brady-, tachygastria)
- Percentage of normal rhythm
- postprandial-to-fasting power ratio
- dominant frequencies (DF) and the power of them (DP)
- peak power
- migrating motor complex (MMC) phase III
- dominant frequency and power instability coefficient (DFIC and DPIC respectively)

A 3 cpm körüli komponens normál tartománya cikkenként eltérő. Egyéb vizsgált komponensek voltak még az 1, 6, 8 és 11 cpm körüli elektromos aktivitások.

A mérés a cikkek döntő többségében étkezés előtt és után is megtörtént Általában a műtétet követő pár napban vagy pár hónapban történtek a mérések.



A mérések időzítése azokban a cikkekben, ahol ez az absztraktban meg volt adva. (Minden sor egy cikk, kékkel jelölve az időszakok, amikor 1-1 mérés történt).

		Special inclusion criteria	Operation	Intervention	Group1	comment	Group2	comment	Control group	comment	EKG channels	timing	investigated CPM component(s)	EKG parameters	time after operation (d=day, m=month, y=year)	before operation
Amaris, M. A.; Sanmiguel, C. P.; Sadowski, D. C.; Bowes, K. L.; Mintchev, M. P.;	Electrical activity from colon overlaps with normal gastric electrical activity in cutaneous recording	no	posttotal colectomy or posttotal gastrectomy	no	8	posttotal colectomy	4	posttotal gastrectomy	10	volunteers	4	fasting	2.5-3.7	?	?	?
Batvinkov, N. I.; Loskevich, N. N.; Mozheiko, M. A.; Kashirin, I. A.;	Vagotomy in the surgical treatment of pyloroduodenal ulcers	no	selective proximal vagotomy as organ-preserving operations in patients with peptic ulcer of the pyloric part of the stomach and duodenum	no	44	-	-	-	-	-	?	?	?	?	?	?

Bókay, J.; Kis, E.; Verebély, T.;	Myoelectrical activity of the stomach after surgical correction of esophageal atresia	infants	esophageal atresia corection	no	15	-	-	-	10	not operated	?	fasting and postprandial	?	?	?	?
Cashion, A. K.; Holmes, S. L.; Hathaway, D. K.; Gaber, A. O.;	Gastroparesis following kidney/pancreas transplant	no	kidney-pancreas transplant	no	42	-	-	-	-	-	?	?	2.7-3.2	normal/brady/tachy	6m, 12m, 24m	yes
Chang, F. Y.; Lu, C. L.; Chen, C. Y.; Luo, J. C.; Lee, S. D.; Wu, H. C.; Chen, J. Z.;	Fasting and postprandial small intestinal slow waves non-invasively measured in subjects with total gastrectomy	no	total gastrectomy	no	33	-	-	-	-	-	3	fasting and postprandial	~1, 2-4, ~6, ~11	dominant frequency/power, % normal rhythm (2-4 cpm), and postprandial-to-fasting power ratio	?	?

Chen, C. L.; Reif, M. E.; Orr, W. C.;	Effect of laparoscopic Nissen fundoplication on symptoms and gastric myoelectric activity in gastroesophageal reflux disease	no	Nissen fundoplication	no	16	-	-	-	-	-	?	before and after drinking water	?	?	2m	yes
Chen, J. D.; Schirmer, B. D.; McCallum, R. W.;	Serosal and cutaneous recordings of gastric myoelectrical activity in patients with gastroparesis	no	serosal stimulation electrode implantation (gastroparetic patients)	serosal electric stimulation	12	-	-	-	-	-	?	fasting and post prandial	?	?	?	?
Cheng, W.; Chow, B.; Tam, P. K.;	Electrogastrographic changes in children who undergo day-surgery anesthesia	children	non-abdominal day-surgery	no	20	-	-	-	-	-	1	?	?	?	0-2h(continuously)	yes

Chupryna, V. V.;	Causes of disorders of motor-evacuation function of the gastric stump in early post-resection periods	no	"operation for peptic ulcers"	no	140	-	-	-	-	-	?	?	?	?	?	yes
Clevers, G. J.; Smout, A. J.; van der Schee, E. J.; Akkermans, L. M.;	Myo-electrical and motor activity of the stomach in the first days after abdominal surgery: evaluation by electrogastrography and impedance gastrography	no	cholecystectomy or major colonic surgery	no	9	cholecystectomy	14	major colonic surgery	-	-	?	?	?	?	?	?
Clevers, G. J.; Smout, A. J. P. M.; Van der Schee, E. J.; Akkermans, L. M. A.;	Changes in gastric electrical activity in patients with severe post-operative nausea and vomiting	no	major abdominal surgery or colonic surgery	no	21	severe GI symptoms after major abdominal surgery	14	no symptoms after colonic surgery	-	-	?	?	?	?	2d	yes

Crittenden, N. E.; Rashed, H.; Johnson, W. D.; Cowan, G.; Tichansky, D.; Madan, A.; Aslam, N.; Cutts, T.; Abell, T. L.;	Long-Term Follow-Up of Autonomic and Enteric Measures in Patients Undergoing Vertical Banded Gastroplasty for Morbid Obesity	no	vertical banded gastroplasty	no	39	-	-	-	-	-	?	?	?	?	3m	yes
Diachenko, P. K.; Lysak, Z. A.;	Changes of the digestive process after gastric resection (Russian)	no	Gastric resection	no	204	-	-	-	-	-	?	?	?	?	?	?
Frasko, R.; Maruna, P.; Gürlich, R.; Fried, M.; Kasalický, M.; Chachkhiani, I.;	[Percutaneous electrogastrography in the perioperative period in laparoscopic gastric banding at the First Surgical Clinic of the General Faculty Hospital in Prague	no	laparoscopic non-adjustable gastric banding	no	14	-	-	-	?	healthy	?	?	?	?	5h, 24h, 48h	yes

Frasko, R.; Maruna, P.; Gürlich, R.; Fried, M.; Kasalický, M.; Chachkhiani, I.; Pesková, M.;	[Percutaneous electrogastrogra phy in the perioperative period in laparoscopic and classical cholecystectom y and in laparoscopic nonadjustable gastric banding]	no	laparoscopic and classical cholecystectomy and laparoscopic nonadjustable gastric banding	no	16	laparosco pic cholecyst ectomy	9	lapar otom ic chole cyste ctom y	14	lapa rosc opic non adju stabl e gastr ic band ing	?	?	?	?	5h, 24h, 48h	yes
Gad Elhak, N.; Abd Elwahab, M.; Nasif, W. A.; Abo- Elenein, A.; Abdalla, T.; el- Shobary, M.; Haleem, M.; Yaseen, A.; el- Ghawalby, N.; Ezzat, F.;	Prevalence of Helicobacter pylori, gastric myoelectrical activity, gastric mucosal changes and dyspeptic symptoms before and after laparoscopic cholecystectom y	no	laparoscopic cholecystectomy	no	46	-	-	-	-	-	?	fasti ng and post pran dial	?	?	?	?

Geng, W.; Cao, Y.; Chang, Y.; Tan, W.; Han, J.;	[Recovery of gastrointestinal motility following laparoscopic versus open cholecystectomy]	no	laparoscopic and open cholecystectomy	no	30	laparoscopic cholecystectomy	18	laparotomic cholecystectomy	-	-	?	?	?	?	?	?
Gürlich, R.; Frasko, R.; Maruna, P.; Chachkhiani, I.;	Randomized clinical trial of itopride for the treatment of postoperative ileus after laparoscopic cholecystectomy	no	laparoscopic cholecystectomy	itopride hydrochloride	25	itopride hydrochloride	-	-	25	placebo	?	?	?	?	6h, 24h, 48h	yes
Gürlich, R.; Maruna, P.; Frasko, R.;	Transcutaneous electrogastrography in the perioperative period in patients undergoing laparoscopic cholecystectomy and laparoscopic non-adjustable gastric banding	no	laparoscopic cholecystectomy and laparoscopic non-adjustable gastric banding	no	20	laparoscopic non-adjustable gastric banding	20	laparoscopic cholecystectomy	15	healthy	?	?	?	?	5h, 24h, 48h	yes

Homma, S.; Hasegawa, J.; Maruta, T.; Watanabe, N.; Matsuo, H.; Tamiya, Y.; Nishimaki, T.; Suzuki, T.; Muto, T.; Hatakeyama, K.;	Isopower maps of the electrogastrogram (EGG) after total gastrectomy or total colectomy	no	total gastrectomy or total colectomy	no	?	-	-	-	-	-	27	fasting and postprandial	1 cpm (0-2.4 cpm), 3 cpm (2.5-4.9 cpm), 6 cpm (5.0-7.4 cpm), 8 cpm (7.5-9.9 cpm) and 10 cpm (10.0-12.9 cpm)	?	?	?
Homma, S.; Kobayashi, Y.; Kosugi, S.; Ohashi, M.; Kanda, T.; Okamoto, H.; Hatakeyama, K.;	Postoperative reorganization of gastric pacemaker activity in patients after an extended period following distal gastrectomy	no	distal gastrectomy	no	12	-	-	-	-	-	?	?	?	?	"between 3 and 262 months"	?

Homma, S.; Sato, K.; Matsuo, H.; Yagi, M.; Hasegawa, J.; Maruta, T.; Watanabe, N.; Iwai, T.; Hatakeyama, K.;	Electrogastrographic activity in patients who received proximal gastrectomy plus jejunal interposition or total gastrectomy plus jejunal interposition	no	proximal gastrectomy plus jejunal interposition or total gastrectomy plus jejunal interposition	no	?	-	-	-	-	-	?	?	?	?	?	?
Homma, S.; Shimakage, N.; Yagi, M.; Hasegawa, J.; Sato, K.; Matsuo, H.; Tamiya, Y.; Tanaka, O.; Muto, T.; Hatakeyama, K.;	Electrogastrography prior to and following total gastrectomy, subtotal gastrectomy, and gastric tube formation	no	total gastrectomy, subtotal gastrectomy, and gastric tube formation	no	?	-	-	-	-	-	?	?	3, 6, 11	peak power, postprandial-to-fasting power ratio	?	yes

Hou, L.;	Effects of electric stimulation to acupoints on gastrointestinal hormones and motility among old postoperative patients with lung tumors	"old patients"	"lung tumour surgery"	acupoint electric stimulation	20	acupoint electric stimulation	20	regular nursing care	-	-	?	?	?	?	1d, 3d, 5d	?
Imai, K.; Sakita, M.;	Pre- and postoperative electrogastrography in patients with gastric cancer	no	total or subtotal gastrectomy because of gastric cancer	no	23	-	-	-	10	volunteers	?	fasting and postprandial	?	?	?	yes
Izbéki, F.; Wittmann, T.; Odor, S.; Botos, B.; Altorjay, A.;	Synchronous electrogastrographic and manometric study of the stomach as an esophageal substitute	no	subtotal esophagectomy	no	21	-	-	-	18	healthy volunteers	?	?	?	?	?	?

Jalanko, T.; Helenius, I.; Pakarinen, M.; Puisto, V.; Salminen, P.; Peltonen, J.; Rintala, R.; Koivusalo, A.;	Effects of surgical correction of neuromuscular scoliosis on gastric myoelectrical activity, emptying, and upper gastrointestinal symptoms	children	surgical correction of neuromuscular scoliosis	no	28	-	-	-	-	-	?	?	?	power ratio	?	yes
Jian, W.; Heng, L.; Hui, Q. Q.;	Effect of Da-Cheng-Qi-Tang on gastrointestinal motility in patients undergoing laparotomy	no	Laparotomic surgery	Chinese Herbal	31	abdominal surgery	36	cholecystectomy	-	-	?	?	?	?	1d, 2d, 3d, 4d, 5d	?
Kang, W. M.; Yu, J. C.; Zhang, Q.; Ke, M. Y.; Qian, J. M.;	Effects of enteral and parenteral nutrition on gastroenteric hormones and gastric motility after subtotal gastrectomy	no	subtotal gastrectomy	enteral vs parenteral nutrition	20	EN	21	PN	-	-	?	?	?	?	1d, 7d	yes

Kauer, W. K.; Stein, H. J.; Balint, A.; Siewert, J. R.;	Transcutaneous electrogastrogra- phy: a non- invasive method to evaluate post-operative gastric disorders?	no	upper GI surgery (cholecystectomy n = 10, Nissen fundoplication n = 10, subtotal gastrectomy n = 8, truncal vagotomy, and gastric pull-up as esophageal replacement n = 6)	no	49	-	-	-	19	asy mpt oma tic heal thy volu ntee rs	?	fasti ng and post pran dial	2-4	normal/brady/tach y, dominant frequency and power of the dominant frequency	?	?
Kim, H. Y.; Park, S. J.; Kim, Y. H.;	Clinical application of electrogastrogra phy in patients with stomach cancer who undergo distal gastrectomy	no	distal gasterctomy because of gastric cancer	no	20	-	-	-	-	-	?	fasti ng and post pran dial	?	?	1w, 12w, 24w	?
Krygowska- Wajs, A.; Furgala, A.; Gorecka- Mazur, A.; Pietraszko, W.; Thor, P.; Potasz- Kulikowska, K.; Moskala, M.;	The effect of subthalamic deep brain stimulation on gastric motility in Parkinson's disease	Parki nson' s disea se	subthalamic deep brain stimulation	no	20	-	-	-	-	-	?	?	?	normal/brady/tach y, period dominant power, arrhythmia%	3m	yes

Lawlor, P. M.; McCullough, J. A.; Byrne, P. J.; Reynolds, J. V.;	Gastric myoelectrical activity post-chemoradiotherapy and esophagectomy: a prospective study using subscapular surface recording	no	esophagectomy	no	11	-	-	-	20	"normal volunteers"	?	?	?	normal/brady/tachy, power ratio	3m, 6m, 12m	yes
Lee, H. F.; Chang, F. Y.; Lu, C. L.; Luo, J. C.; Chen, C. Y.; Wu, H. C.;	Electrogastrographic characteristics in subjects with stomach remnant	no	distal radical subtotal gastrectomy	no	58	-	-	-	58	age- and sex-matched healthy subjects	?	fasting and postprandial	?	dominant frequency (DF)/power (DP), percentage of normal rhythm (2-4 cpm), power ratio (PR)	?	?

Li, M.; Chen, Y.; Liu, M.; Wang, M.; Zhang, D.; Cheng, W.; Jiang, L.; Zhou, X.;	Clinical Study on Changes of Gastric Myoelectrical Activity and Autonomic Nerve Function in Cirrhotic Patients With Gastroesophageal Varices After Endoscopic Treatment	cirrhotic patients with GOV	gastroesophageal varices endoscopic treatment	no	25	-	-	-	10	gastric polyp	?	?	?	?	1d, 5d	yes
Li, M.; Xu, F.; Liu, M.; Li, Y.; Lin, L.; Chen, J.;	PROMOTING EFFECTS AND AUTONOMIC MECHANISMS OF TRANSCUTANEOUS ELECTRICAL ACUSTIMULATION ON THE POSTOPERATIVE RECOVERY AFTER CAESAREAN SECTIONS	no	caesarean section	transcutaneous electrical acustimulation	54	intervention	-	-	54	control	?	?	?	?	4h, 1d, 3d	?

Lin, X.; Wu, J.; Du, J.;	Study on effect of spine surgery on gastric function and its efficacy of relevant treatments	no	spine surgery	no	20	-	-	-	20	healthy subjects	?	?	?	?	?	?
Liu, J. F.; Liu, C. J.; Shi, Z. H.; Liu, X. B.; Jiang, T.; Wang, F. S.; Cao, F. M.; Li, B. Q.;	Effect of erythromycin on electrical activity and gastric emptying of the intrathoracic stomach after esophagectomy for esophageal cancer	no	esophagectomy because of esophageal cancer	erythromycin	15	erythromycin	-	-	15	placebo	?	?	?	wave amplitude (Uv), dominant frequency (CPM) and percentage of normal slow wave (%)	1m, 3m, 6m, 12m	yes
Liu, J. F.; Yu, J. H.; Liu, L.; Zhang, S. W.; Liu, C. J.; Wang, J. D.;	The effects of blood motilin and gastrin on electrical activity and emptying of the intrathoracic stomach after esophagectomy for cancer	no	esophagectomy because of esophageal cancer	no	32	-	-	-	20	"normal volunteers"	?	?	?	?	1m, 3m, 6m, 12m	yes

Lombardo, L.; Ruggia, O.; Crocellà, L.; Masoero, G.; Foti, M.; Mambrini, S.; Palombo, D.; Melchiorri, C.; Lupo, M.; Pera, A.	Epidural plus general anesthesia vs general anesthesia alone for elective aortic surgery: effects on gastric electrical activity and serum gastrin secretion	no	elective aortic surgery	additio nal epidura l anesthe sia	17	general anesthesi a	17	gene ral + epid ural anest hesia	-	-	?	?	?	power ratio	24h	?
Maruna, P.; Frasko, R.; Lindner, J.;	Disturbances of gastric electrical control activity after laparotomic cholecystectom y are related to interleukin-6 concentrations	no	laparotomic or laparoscopic cholecystectomy	no	52	-	-	-	-	-	3	?	2.4-	normal/brady/tach y	?	?
Matyja, A.; Thor, P.; Popiela, T.; Tabor, S.; Pitala, A.;	Late effect of vagotomy on gastric myoelectric activity	no	Truncal vagotomy with or without pyloroplasty or Truncal vagotomy+gastric resection	no	30	-	-	-	-	-	?	fasti ng and post pran dial	?	?	?	?

Murakami, H.; Matsumoto, H.; Kubota, H.; Higashida, M.; Nakamura, M.; Hirai, T.;	Evaluation of electrical activity after vagus nerve-preserving distal gastrectomy using multichannel electrogastrography	no	vagus nerve-preserving distal gastrectomy	no	26	-	-	-	12	healthy volunteers	?	fasting and postprandial	2-4	?	?	?
Ohtaki, M.; Yagi, M.; Kubota, M.; Homma, S.;	A disturbance of the gastric myoelectric activity in post-operative patients with biliary atresia	children	surgery because of biliary atresia	no	21	-	-	-	-	-	?	?	?	dominant peak frequency	?	?
Ohtani, S.; Iwafuchi, M.; Ohsawa, Y.; Uchiyama, M.; Yagi, M.; Homma, S.;	Electrogastrography in patients after operative repair of gastric rupture	children	operative repair of a gastric rupture	no	13	-	-	-	8	normal, age-matched controls	?	fasting and postprandial	?	power ratio, dominant frequency	?	?

Popiela, T.; Sobocki, J.; Thor, P.; Matyja, A.; Drews, M.;	Temporary gastric pacemaker in the treatment of postoperative gastroparesis refractory to conventional therapy	no	"postoperative gastroparesis"	serosal electric stimulation	18	-	-	-	-	-	?	?	?	?	?	?
Qi, Q.; Cao, P.; Han, Y.;	The changes of electrogastrogram and gastrointestinal pressure following cholecystectomy	no	cholecystectomy	no	22	-	-	-	-	-	?	?	?	migrating motor complex phase III	1d, 2d, 3d	yes
Riezzo, G.; Pezzolla, F.; Giorgio, I.	Electrical activity recorded from abdominal surface before and after gastric surgery in man	men	total gastrectomy or Billroth II gastric resection because of ulcer or gastric cancer	no	13	-	-	-	8	cholecystectomy	?	fasting and postprandial	?	ratio of frequency components	?	yes

Sgouros, S. N.; Vlachogiannakos, J.; Karamanolis, G.; Stefanidis, G.; Papadopoulou, E.; Pechlivanides, G.; Nousis, G.; Mantides, A.;	Gastric electrical activity in patients with cholelithiasis undergoing laparoscopic cholecystectomy: a prospective controlled study	no	laparoscopic cholecystectomy	no	21	-	-	-	-	-	?	fasting and post prandial	2.2-3.9	normal/brady/tachy	4-6m	yes
van Dielen, F. M.; de Cock, A. F.; Daams, F.; Brummer, R. J.; Greve, J. W.;	Gastric myoelectrical activity in morbidly obese patients before and 3 months after gastric restrictive surgery	no	gastric restrictive surgery	no	40	-	-	-	-	-	?	fasting and post prandial	?	dominant frequency (DF(f/pp)), dominant power (DP(f/pp)), dominant frequency and power instability coefficient (DFIC and DPIC respectively) and power ratio	9m	yes

Wiestaw, T.; Adam, K.; Artur, B.; Lech, B.; Krzysztof, B.;	Nissen fundoplication improves gastric myoelectrical activity characteristics and symptoms in gastroesophage al reflux patients: evaluation in transcutaneous electrogastrogra phy	no	Nissen fundoplication	no	43	-	-	-	8	heal thy volu ntees	?	fasti ng and post pran dial	?	normal/brady/tach y	3w, 1y	yes
Wong, S. K.; Chiu, P. W.; Wu, J. C.; Sung, J. J.; Ng, E. K. W.;	Trans- cutaneous electrogastrogra phic study of gastric myoelectric activity in transposed intrathoracic stomach after esophagectomy	no	Ivor-Lewis esophagectomy	no	19	-	-	-	11	total gastr ecto my	?	?	2.4-3.6	normal/brady/tach y, power ratio, dominant frequency	?	?

Yagi, M.; Homma, S.; Iwafuchi, M.; Uchiyama, M.; Matsuda, Y.; Maruta, T.;	Electrogastrogra phy after operative repair of esophageal atresia	no	esophageal atresia corection	no	13	-	-	-	-	-	?	?	?	?	?	?
Yagi, M.; Homma, S.; Kubota, M.; Iinuma, Y.; Kanada, S.; Kinoshita, Y.; Ohtaki, M.; Yamazaki, S.; Murata, H.;	The herbal medicine Rikkunshi-to stimulates and coordinates the gastric myoelectric activity in post- operative dyspeptic children after gastrointestinal surgery	childr en with dysp eptic symt oms	GI surgery	Chinese Herbal	9	interventi on	-	-	6	age- mat ched heal thy subj ects	?	?	?	?	?	?
Zhang, Q.; Yu, J. C.; Kang, W. M.; Ke, M. Y.; Qian, J. M.;	Changes of serum gastrin, plasma motilin, and gastric motility in gastric cancer patients after subtotal gastrectomy	no	gastrectomy because of gastric cancer	no	39	-	-	-	39	heal thy volu ntee rs	?	?	?	?	7d	yes

Zhou, J.; Zhao, M. G.; Zhang, X. P.; Mo, J. B.; Xu, Y. Q.; Yan, X. K.;	Clinical research on acupuncture combined with TDP for stump stomach atony after subtotal gastrectomy	no	subtotal gastrectomy	acupoint electric stimulation	53	-	-	-	-	-	?	fasting and post prandial	?	power ratio	?	?
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