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Minimāli invazīvās ķirurģijas iespējas jaundzimušajiem Latvijā

Zane Ābola
Bērnu ķirurgs
Bērnu klīniskā universitātes slimnīca
Rīgas Stradiņa universitāte
03.11.2023.

Daudzi zina daudz, visu – neviens!
Multi multa sciunt, nemo omnia!

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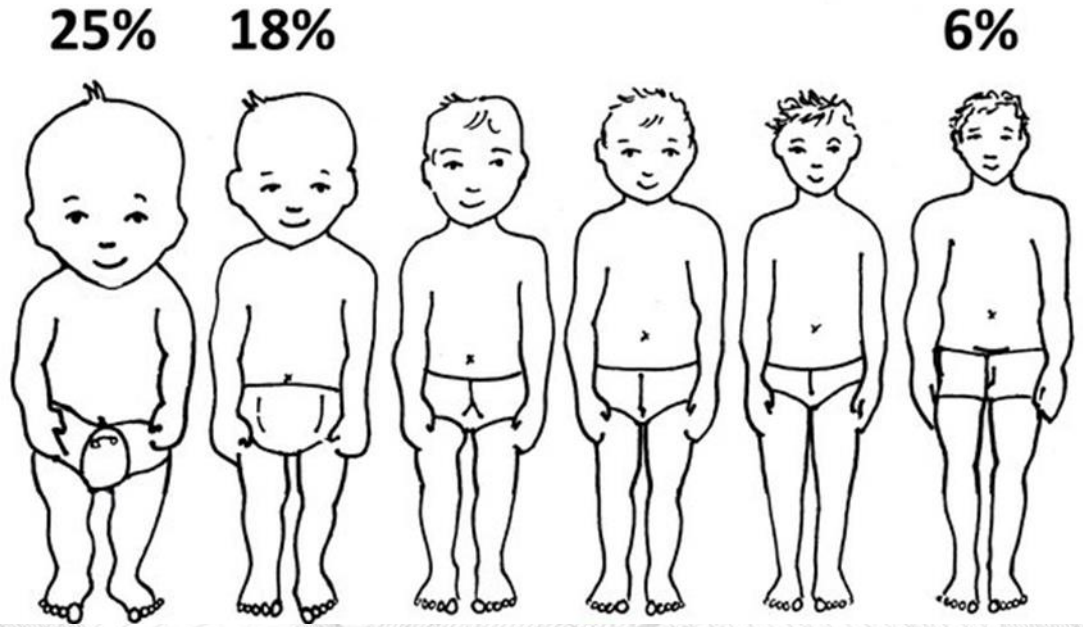
Bērns nav maza izmēra pieaugušais



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Jaundzimušais nav «vienkārši maza izmēra bērns»

Jaundzimušais – no dzimšanas līdz 28 dienām

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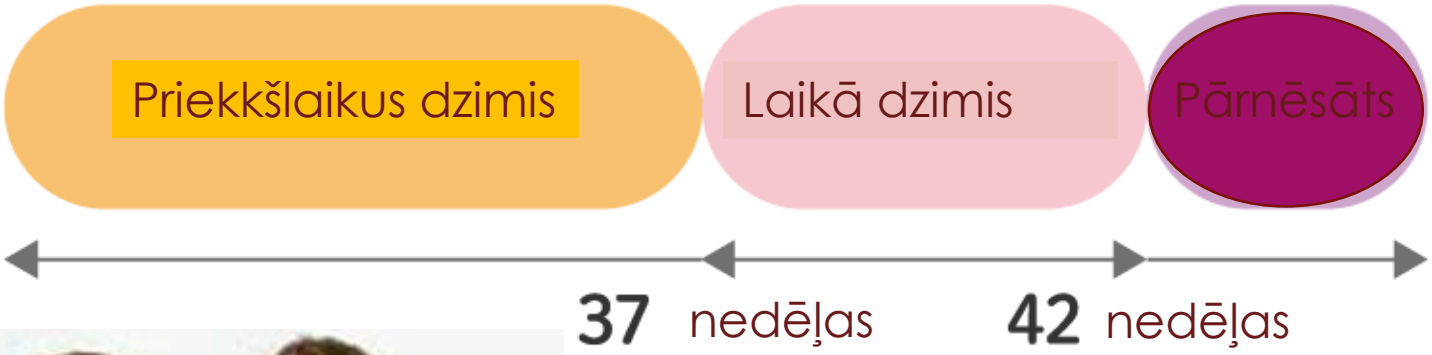

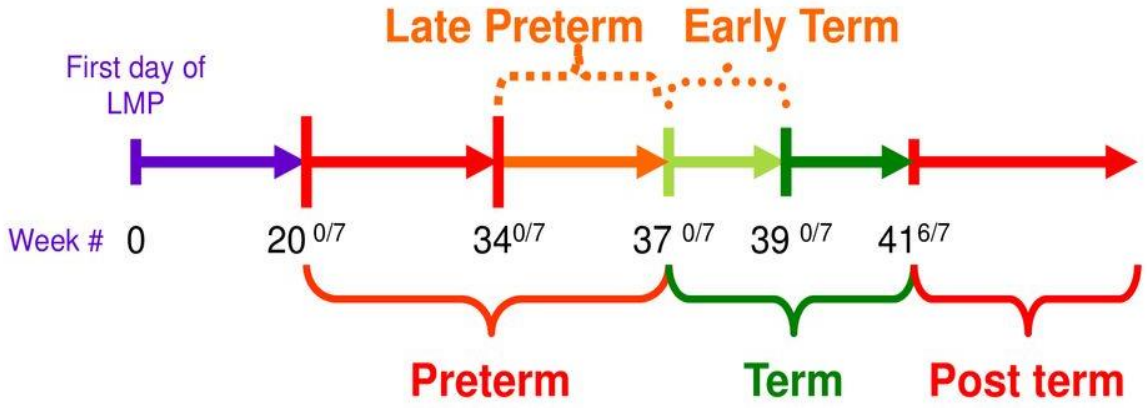

Neiznēsāts jaundzimušais nav «vienkārši maza izmēra jaundzimušais»

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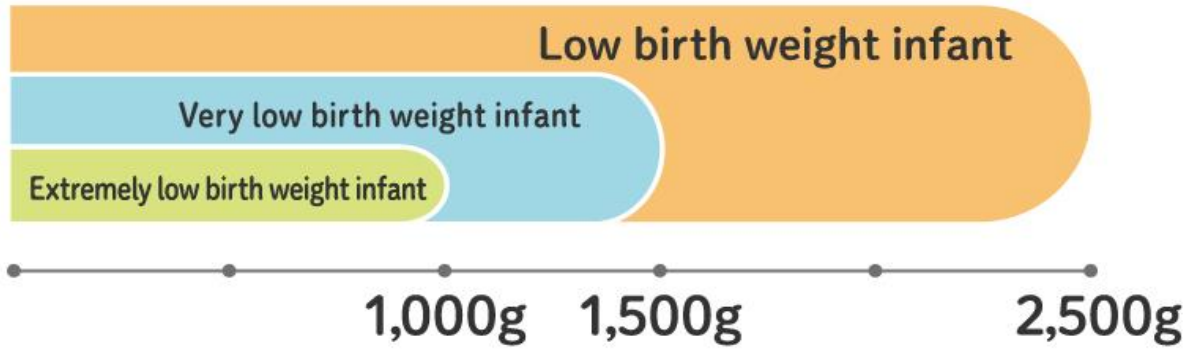

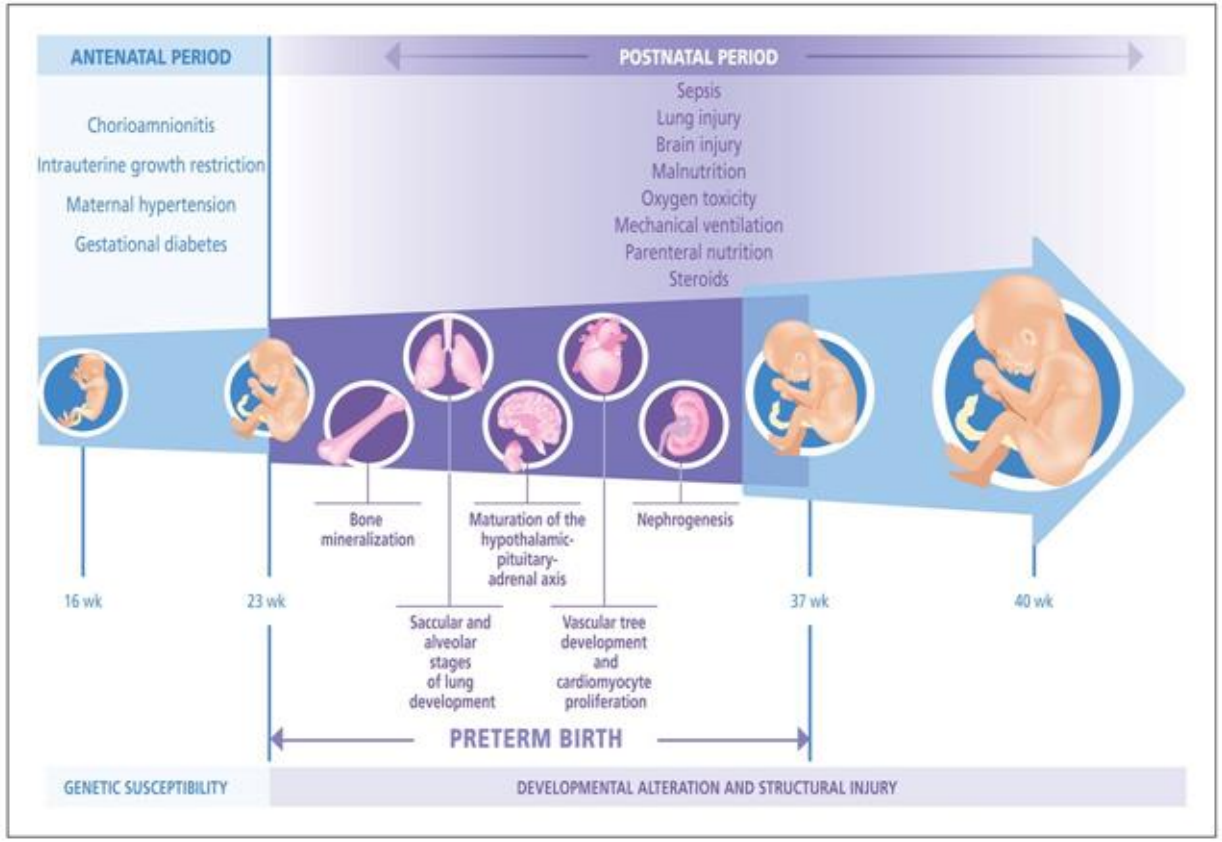

Jaundzimušais ⟷ pieaugušais

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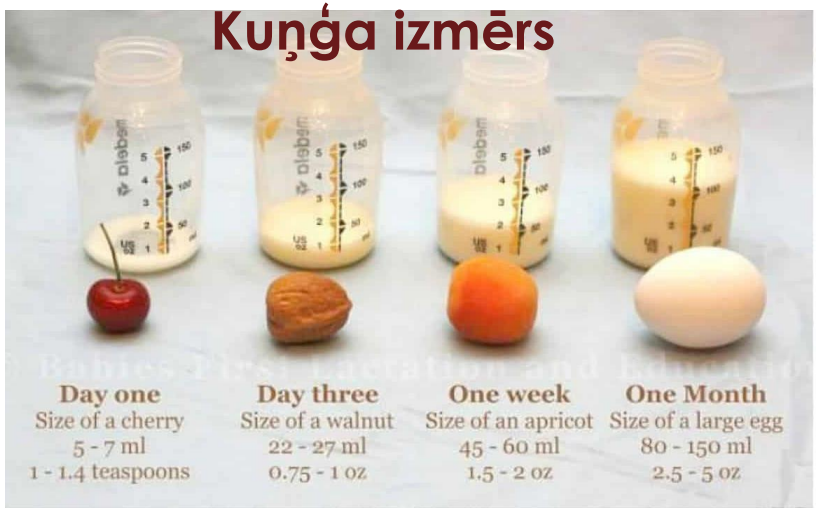
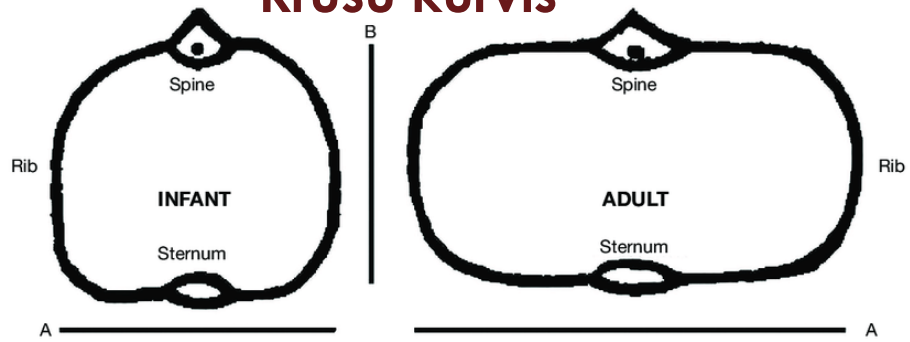
Kuņģa izmērs



Krūšu kurvis



Barības vada diametrs

Parameter	Age, y	n	Range, mm	Mean ± SD, mm
Anteroposterior diameter	1–5	9	4.0–7.2	5.8 ± 1.1
	5–10	20	4.7–10.2	6.5 ± 1.2
	10–15	12	4.7–10.7	7.4 ± 1.7
Transverse diameter	1–5	9	5.3–13.3	9.3 ± 2.1
	5–10	20	8.4–12.4	10.0 ± 1.2
	10–15	12	7.3–16.8	11.0 ± 3.0

Jaundzimušā barības vada diametrs 2.7-4.0 mm

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Minimāli invazīvās ķirurģijas (MIS) iespējas

MIS (bērniem) attīstība pasaulē

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1970
diagnostiska laparoskopija

1976
diagnostiska torakoskopija

1995
laparoskopiska diafragmas trūces korekcija jaundzimušajam

1999
torakoskopiska barības vada atrēzijas korekcija

2001
torakoskopiska diafragmas trūces korekcija jaundzimušajam

2002
laparoskopiska Kasai portoenterostomija

2008
pirmās publikācijas robotķirurģijā bērniem

MIS (bērniem) attīstība Latvijā

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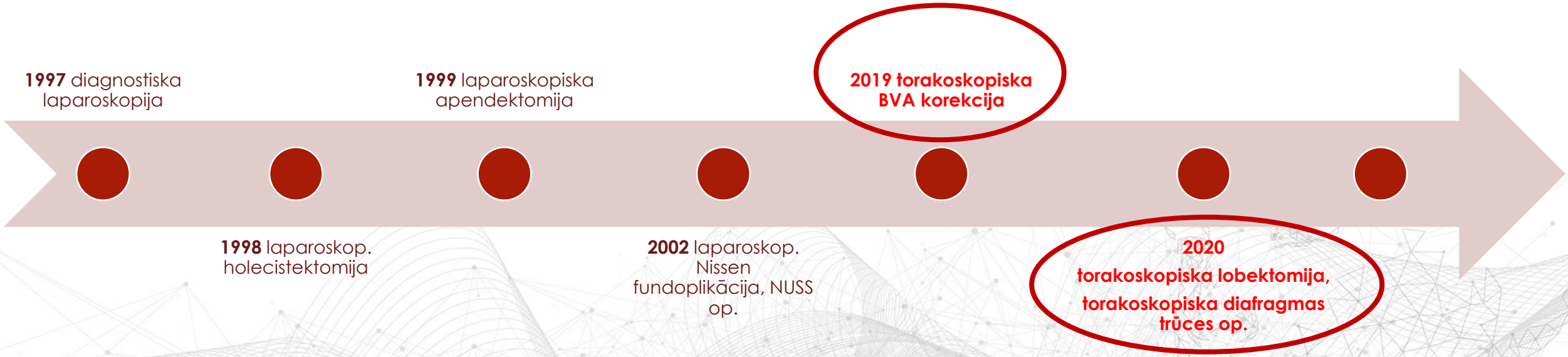

Laparoskopija	Torakoskopija
Piloromiotomija	Diafragmas trūces korekcija
Fundoplikācija	Barības vada atrēzijas korekcija/TEF ligēšana
Diafragmas trūces korekcija	Aortopeksija
Pull-through	Plaušas biopsija/lobektomija
Anorektoplastija	Dekortikācija empiēmas gadījumā
Ladda procedūra	Cistu/sekvestrāciju ekstripācija
Cirkšņa trūces korekcija	Videnes masas ekstripācija
Holangiogrāfija	
Divpadsmitpirkstu zarnas atrēzijas korekcija	
Gastrostomija	
Nefrektomija	
Kasai	
Zarnu duplikāciju korekcija	
Retroperitoneālas masas ekstripācija	

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MIS jaundzimušajiem

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Ierobežojumi:

- instrumenti *vs* pacients
- ergonomika
- fizioloģija (CO_2, i/abd. spiediens, dalītā intubācija)
- multiplas patoloģijas
- svars
- ārsta kompetence/pieredze
- komandas darbs

MIS jaundzimušajiem

Priekšrocības:

- mazāka operācijas trauma
- vizualizācija
- mazāk pretsāpju medikamenti
- mazāk komplikāciju*
- īsāks hospitalizācijas laiks
- kosmētiskais ieguvums

Journal of Neonatal Surgery 2017; 6:59
Doi:10.21699/jns.v6i3.614

OPEN ACCESS

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REVIEW ARTICLE

Minimal Access Surgery in Neonates

Ashrarur Rahman Mitul[1],* Yogesh Kumar Sarin[2]

1 Department of Pediatric Surgery, Bangladesh Institute of Child Health & Dhaka Shishu (Children) Hospital, Bangladesh

2 Department of Pediatric Surgery, Maulana Azad Medical College, New Delhi, India

How to cite: Mitul AR, Sarin YK. Minimal access surgery in neonates. J Neonatal Surg. 2017;6:59.

ABSTRACT

Despite the significant advancement of minimally invasive surgery (MIS) in the adults and even in pediatric population, its role as the standard of care in the neonates has not yet been established among the pediatric and neonatal surgeons universally. Lots of controversies still arise though several advanced centers in the world having very experienced surgeons performing MIS for neonatal surgical conditions with promising outcomes. The unique physiological characteristics of a neonate make MIS quiet a challenging subject among these tiny babies. We have tried to look into the recent literature on the issues related to the use of MIS for the surgical management of neonates.

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“primum non nocere”

Piloromiotomija

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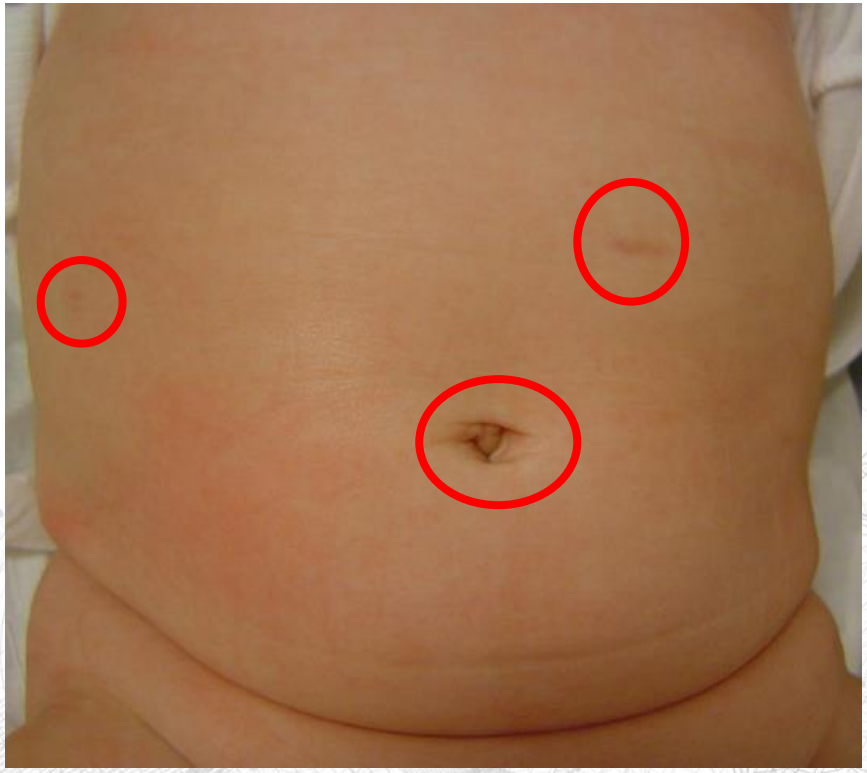
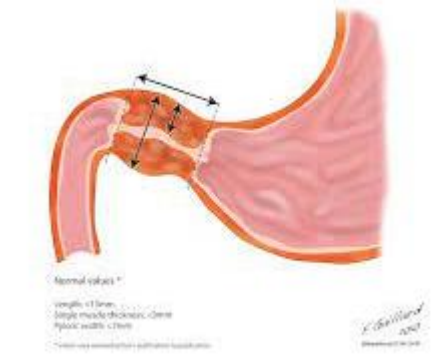
Konvencionāla



Laparoskopiska

?



Piloromiotomija

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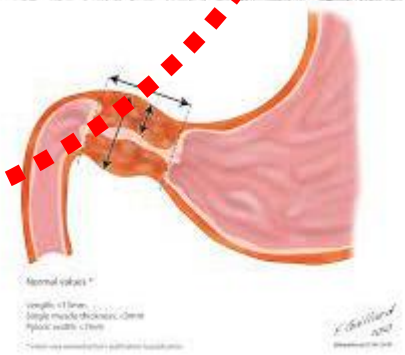
?

Viena *porta* laparoskopija

Transumbilikāla

?



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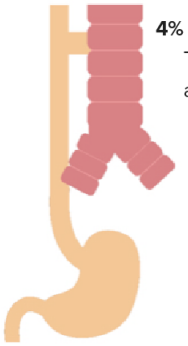
2019. gads

Barības vada atrēzija

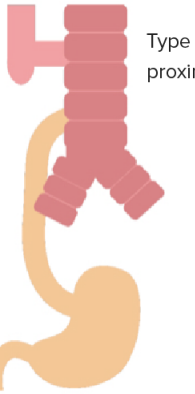
86%
Type C: atresia with distal tracheoesophageal fistula (TEF)

8%
Type A: atresia without TEF

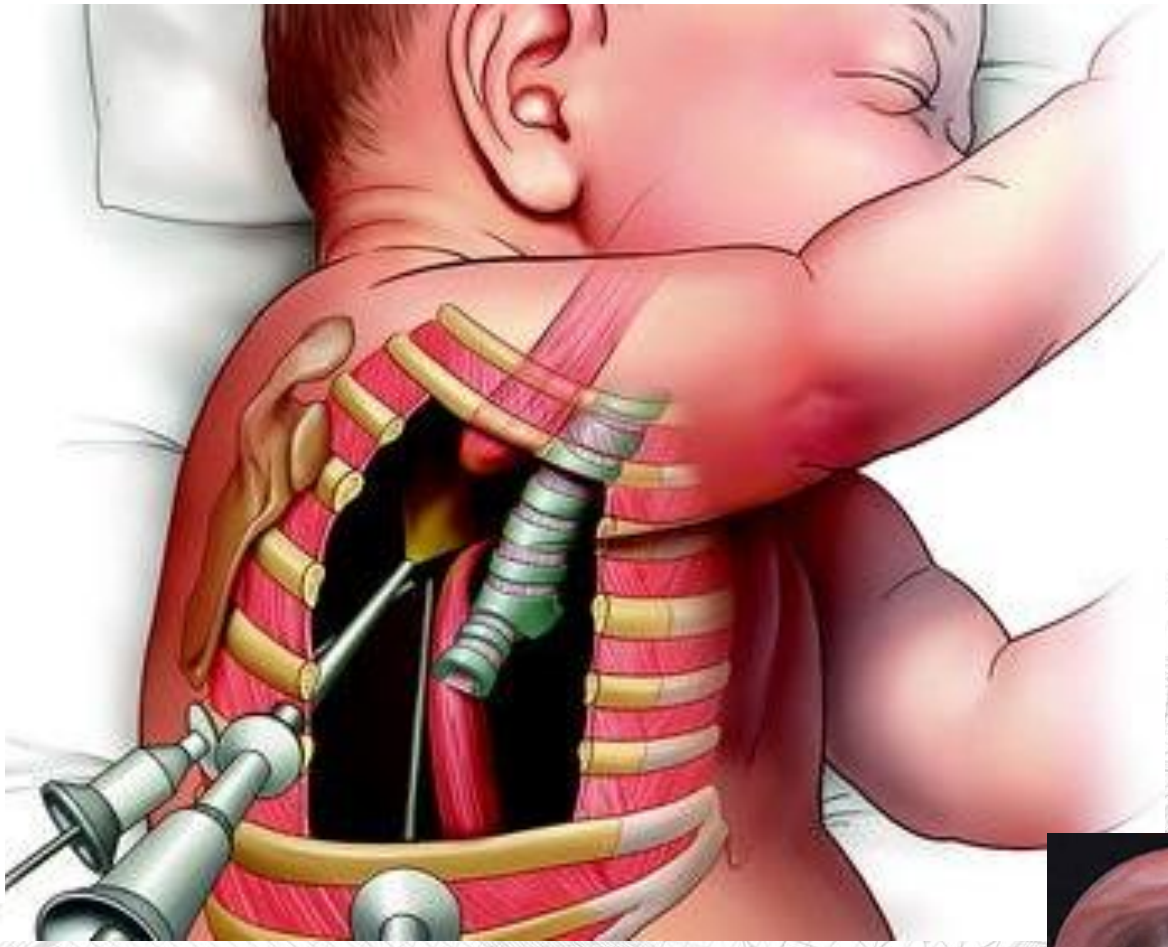


4%
Type E: TEF without atresia (H-type)

Type B: atresia with proximal TEF



Type D: atresia with proximal and distal TEF



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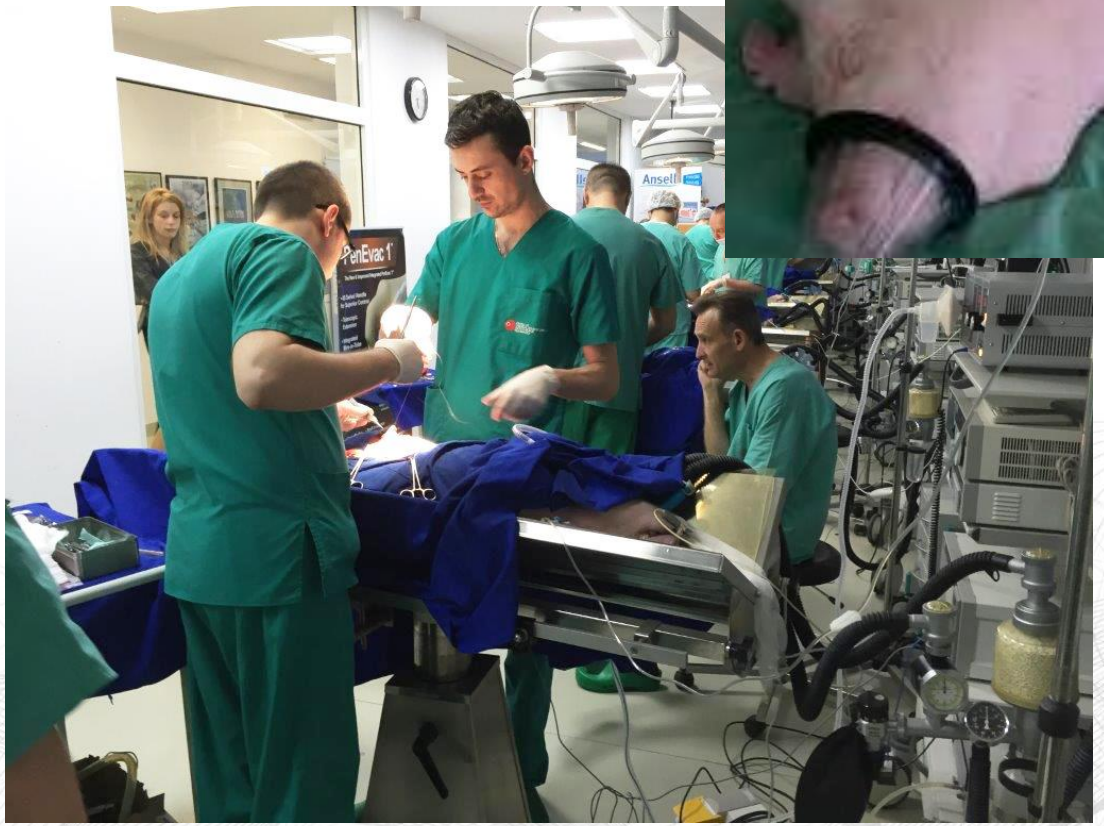

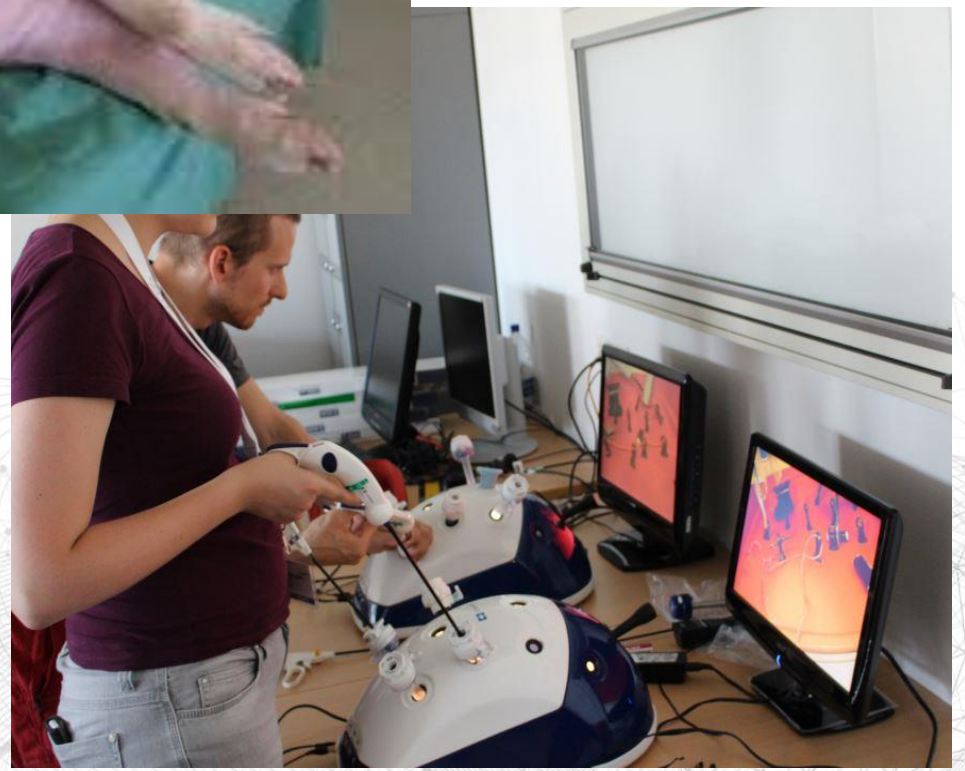

Pieredze

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Bērnu klīniskā universitātes slimnīca

The surgeon should never hesitate to convert to open procedure, which frankly is an evidence of his good judgement and not his incompetence

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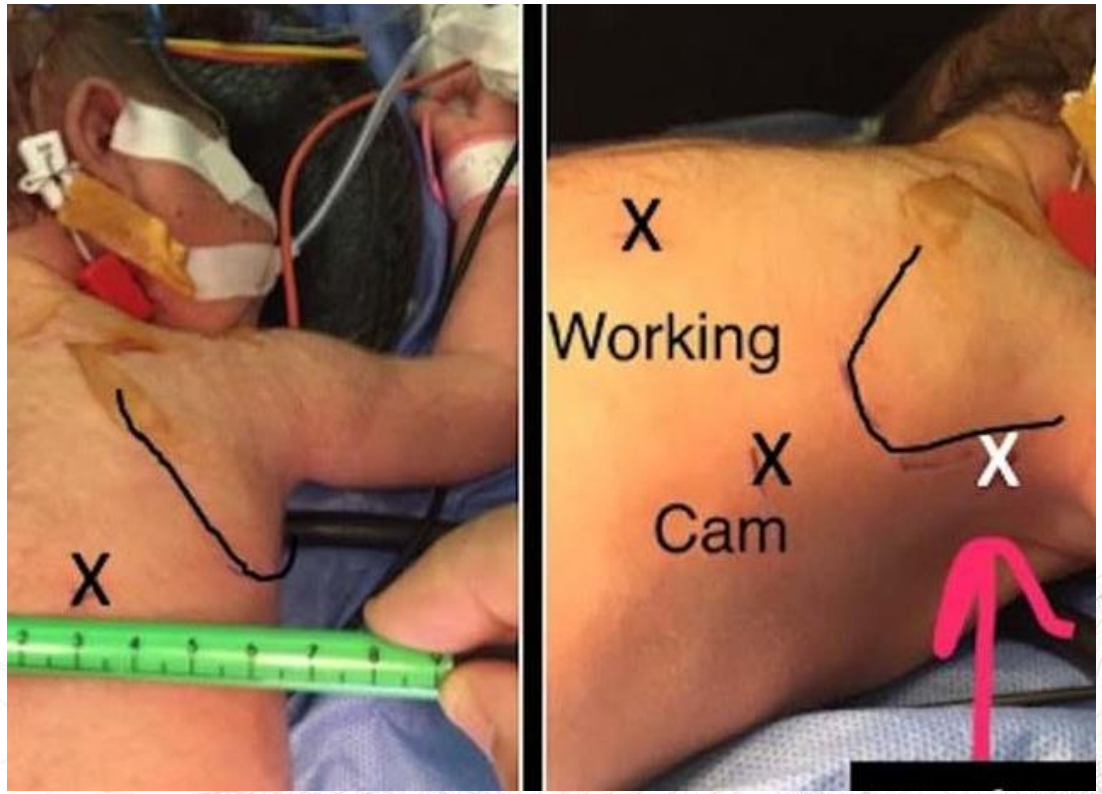

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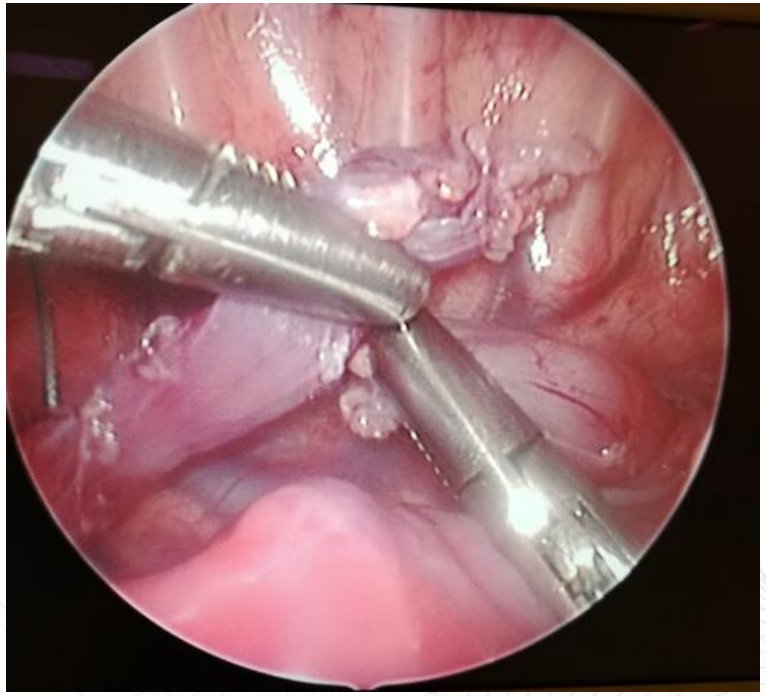

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Diseases of the Esophagus (2020)00,1–5
DOI: 10.1093/dote/doaa001

DISEASES OF THE ESOPHAGUS

ISDE The International Society for Diseases of the Esophagus

Original Article

Outcome of thoracoscopic repair of type-C esophageal atresia: a single-center experience from North Africa

Mohamed M Elbarbary,[1,*] Aly Shalaby,[1] Mohamed Elseoudi,[1] Hamed M Seleim,[2] Moutaz Ragab,[1] Ahmed E Fares,[3] Dalia Khairy,[1] Ahmed M.K. Wishahy,[1] Ramy M Alkonaiesy,[1] Gamal Eltagy,[1] Khaled Bahaaeldin[1]

[1]*Pediatric Surgical Department, Cairo University Specialized Pediatric Hospital, Cairo, Egypt,* [2]*Pediatric Surgical Department, Tanta University Hospital, Tanta, Egypt, and* [3]*Pediatric Surgical Department, Fayoum University Hospitals, Fayoum, Egypt*

SUMMARY. **Thoracoscopic repair of esophageal atresia is gaining popularity worldwide attributable to availability and advances in minimally invasive instruments. In this report, we presented our experience with thoracoscopic esophageal atresia/tracheoesophageal fistula (EA/TEF) repair in our tertiary care institute. A prospective study on short-gap type-C EA/TEF was conducted at Cairo University Specialized Pediatric Hospital between April 2016 and 2018. Excluded were cases with birth weight < 1500 gm, inability to stabilize physiologic parameters, or major cardiac anomalies. The technique was standardized in all cases and was carried out by operating team concerned with minimally invasive surgery at our facility. Primary outcome evaluated was successful primary anastomosis. Secondary outcomes included operative time, conversion rate, anastomotic leakage, recurrent fistula, postoperative stricture, and time till discharge. Over the inclusion period of this study, 136 cases of EA/TEF were admitted at our surgical NICU. Thoracoscopic repair was attempted in 76 cases. In total, 30 cases were pure atresia/long gap type-C atresia and were excluded from the study. Remaining 46 cases met the inclusion criteria and were enrolled in the study. Mean age at operation was 8.7 days (range 2–32), and mean weight was 2.6 Kg (range 1.8–3.6). Apart from five cases (10.8%) converted to thoracotomy, the mean operative time was 108.3 minutes (range 80–122 minute). A tension-free primary anastomosis was possible in all thoracoscopically managed cases ($n = 41$) cases. Survival rate was 85.4% ($n = 35$). Anastomotic leakage occurred in seven patients (17%). Conservative management was successful in two cases, while esophagostomy and gastrostomy were judged necessary in the other for five. Anastomotic stricture developed in five cases (16.6%) of the 30 surviving patients who kept their native esophagus. Despite the fact that good mid-term presented results may be due to patient selection bias, thoracoscopic approach proved to be feasible for management of short-gap EA/TEF. Authors of this report believe that thoracoscopy should gain wider acceptance and pediatric surgeons should strive to adopt this procedure.**

KEY WORDS: **esophageal atresia, minimally invasive surgery, thoracoscopy, tracheoesophageal fistula.**

Yang *et al. BMC Surgery* (2021) 21:403
https://doi.org/10.1186/s12893-021-01360-7

BMC Surgery

RESEARCH Open Access

Clinical comparison between thoracoscopic and thoracotomy repair of Gross type C esophageal atresia

Shen Yang[1†], Peize Wang[1†], Zhi Yang[2†], Siqi Li[1], Junmin Liao[1], Kaiyun Hua[1], Yanan Zhang[1], Yong Zhao[1], Yichao Gu[1], Shuangshuang Li[1], Yongwei Chen[1] and Jinshi Huang[1,2*]

Abstract

Background: To compare the clinical outcomes between thoracoscopic approach and thoracotomy surgery in patients with Gross type C Esophageal atresia (EA) and tracheoesophageal fistula (TEF).

Methods: Patients with Gross type C EA/TEF who underwent surgery from January 2007 to January 2020 at Beijing Children's Hospital were retrospectively analyzed. The patients were divided into two groups according to surgical approaches. The perioperative factors and postoperative complications were compared among the two groups.

Results: One hundred and ninety patients (132 boys and 58 girls) with a median birth weight of 2975 (2600, 3200) g were included. The primary operations were performed via thoracoscopic (n = 62) and thoracotomy (n = 128) approach. After comparison of clinical characteristics between the two groups, we found that there were statistically significant differences in associated anomalies, method of fistula closure, duration of mechanical ventilation after surgery, feeding option before discharge, management of pneumothorax, and prognosis (all $P < 0.05$). To a certain extent, thoracoscopic surgery reduced the incidence of anastomotic leakage and increased the incidence of anastomotic stricture in this study. However, there were no statistically significant differences between the two groups in terms of operative time, postoperative pneumothorax, anastomotic leakage, anastomotic stricture, and recurrent tracheoesophageal fistula (all $P > 0.05$).

Conclusions: Thoracoscopy surgery for Gross type C EA/TEF is a safe and effective, minimally invasive technique with comparable operative time and incidence of postoperative complications.

Keywords: Esophageal atresia, Thoracoscopic, Thoracotomy, Comparison, Complications, Outcome

Surgical Endoscopy (2021) 35:1597–1601
https://doi.org/10.1007/s00464-020-07538-z

Thoracoscopic repair of esophageal atresia with distal tracheoesophageal fistula: is it a safe procedure in infants weighing less than 2000 g?

Joonhyuk Son[1] · Yerang Jang[1] · Wontae Kim[1] · Sanghoon Lee[1] · Ji Seon Jeong[2] · Suk-Koo Lee[1] · Jeong-Meen Seo[1]

Received: 23 May 2019 / Accepted: 31 March 2020 / Published online: 22 April 2020

Abstract

Background Since Rothenberg first performed thoracoscopic repair for esophageal atresia with distal tracheoesophageal fistula (EA/TEF) successfully in 2000, thoracoscopic repair has achieved status as a routine procedure worldwide. Previously, an international multicenter study reported that this procedure was not inferior to conventional open surgery. However, thoracoscopic surgery is a highly difficult operation for surgeons and anesthesiologists; as a result, the safety and efficacy of the surgery is still under debate. Considering these circumstances, the purpose of this study was to analyze the results of single-center thoracoscopic surgery and to compare the outcomes relative to the patient's weight at the time of surgery.

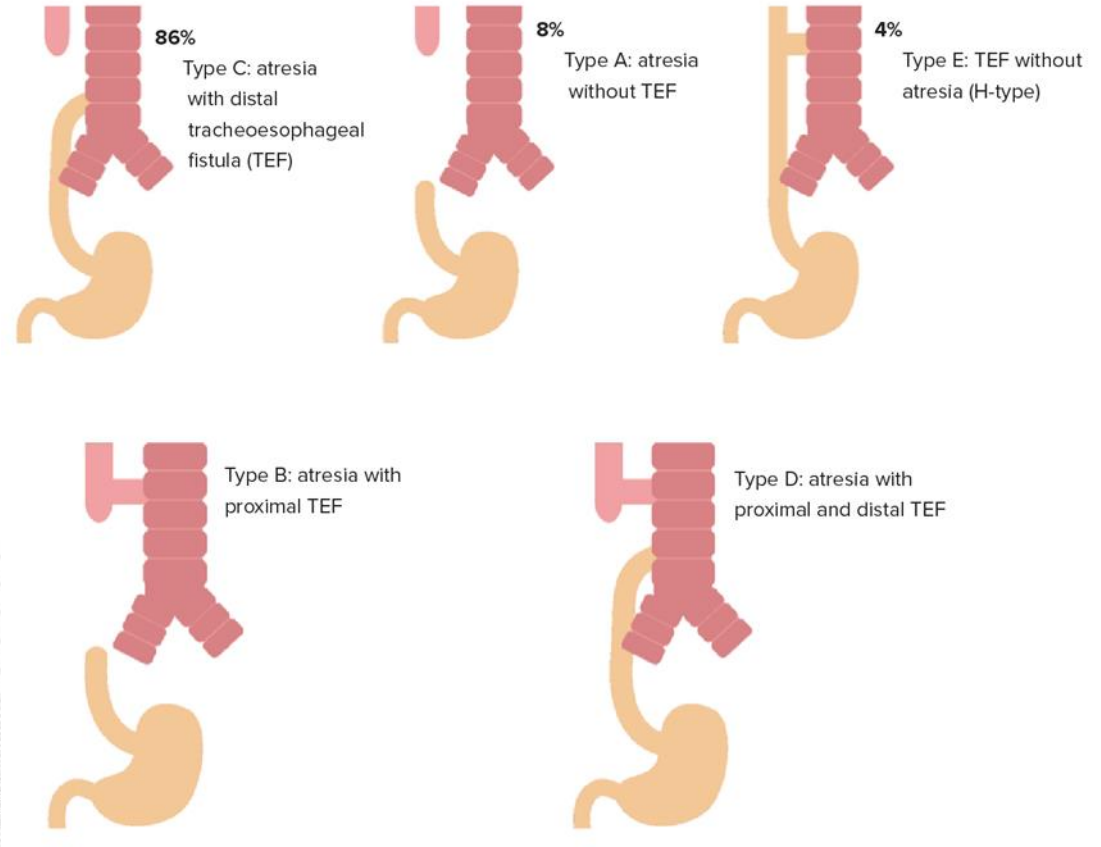
Methods We retrospectively analyzed patients with EA/TEF who underwent thoracoscopic surgery in a single center between October 2008 and February 2017.

Results In total, 41 cases of thoracoscopic repair of EA/TEF were performed. Upon subgrouping by over and under 2000 g of body weight at the time of operation, 34 were found to be over 2000 g and seven were under 2000 g. Intraoperative factors and events were not significantly different between the two groups. Additionally, most of the postoperative outcomes, including the rate of postoperative leakage and strictures, showed no difference. On the other hand, the under 2000 g group had more gastroesophageal reflux requiring fundoplication than did the heavier group ($P = 0.04$).

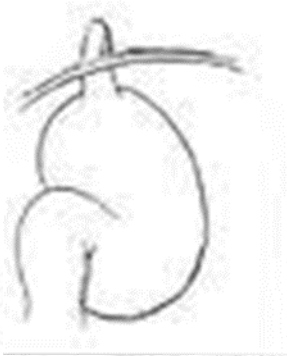
Conclusions The results of this center's thoracoscopic repair of EA/TEF were not inferior to other centers' outcomes. Additionally, the intraoperative and postoperative outcomes were similar despite differences in weight at operation. Therefore, thoracoscopic repair might be a feasible surgical option for infants weighing less than 2000 g when performed by a surgeon and anesthesiologist team who are experienced in pediatric thoracoscopic surgery.

Keywords Esophageal atresia · Tracheoesophageal fistula · Thoracoscopy · Minimally invasive · Low birth weight

Vai primāra anastomoze vienmēr iespējama?



Ne vienmēr....



Nepieciešami vairāki mēneši.

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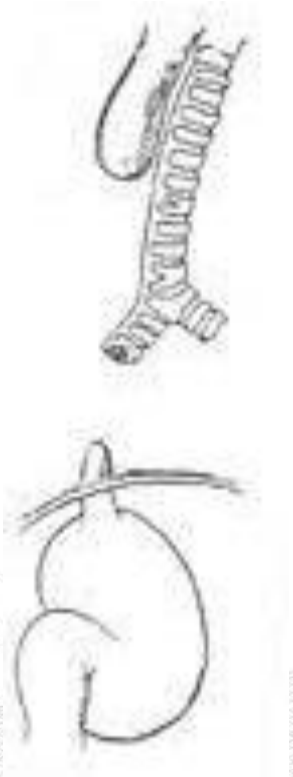
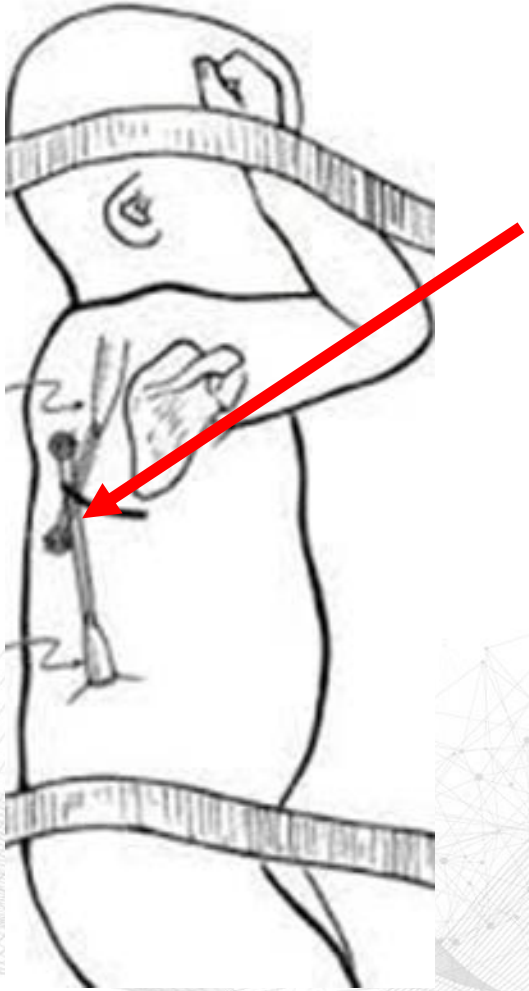
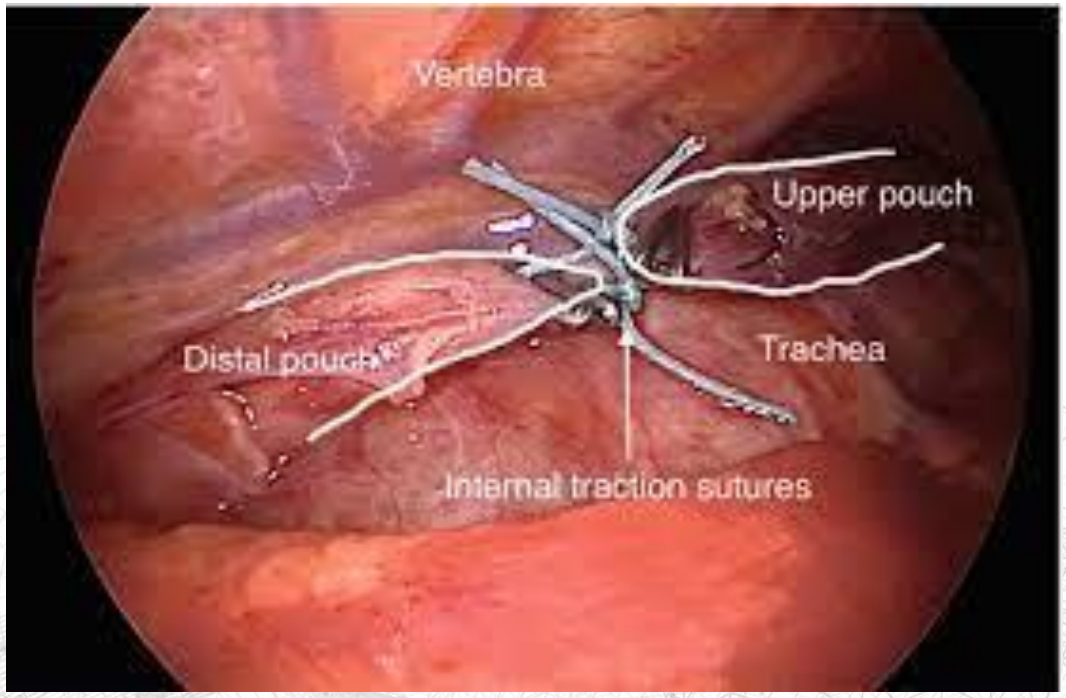
Daudzi zina daudz, visu – neviens!

Multi multa sciunt, nemo omnia!

Trakcijas šuves?







Diafragmas trūce

2020. gads

Surgical Technique on Thoracic Surgery

Pediatric thoracoscopic repair of congenital diaphragmatic hernias

Anne Schneider, François Becmeur

Department of Pediatric Surgery, University Hospital, Strasbourg, France

Contributions: (I) Conception and design: All authors; (II) Administrative support: All authors; (III) Provision of study materials: All authors; (IV) Collection and assembly of data: All authors; (V) Data analysis and interpretation: All authors; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Dr. Anne Schneider. Service de Chirurgie Pédiatrique, Hôpital de Hautepierre, Avenue de Molière, 67000 Strasbourg, France. Email: anne.schneider1@chru-strasbourg.fr.

Abstract: Congenital diaphragmatic hernia (CDH) is a rare congenital disease requiring neonatal surgical treatment. The traditional surgical management of CDH consists of diaphragmatic repair by laparotomy. Thoracoscopic repair techniques have been well described for CDH with late presentation. Nevertheless, its feasibility for CDH treatment in neonates emerged only the past few years because the use of thoracoscopy with carbon dioxide insufflation remains controversial in these patients more vulnerable to hypothermia and acidosis. However, we think that thoracoscopy can be safely used to repair CDH in selected patients and the major limiting factor is pulmonary hypoplasia. Some patients should be excluded based on their higher potential need for patch closure with its technical difficulty and increased operative time. The close collaboration between pediatric surgeon, anesthetist and neonatologist is essential. We discuss here the patient selection criteria, expose the pre- and post-operative management, the procedure steps; regarding to our experience we deliver some tips to achieve the safest surgical procedure for the pediatric patient.

Keywords: Congenital diaphragmatic hernia (CDH); thoracoscopy; neonatal surgery

Received: 24 January 2018; Accepted: 29 January 2018; Published: 28 February 2018.
doi: 10.21037/jovs.2018.02.03
View this article at: http://dx.doi.org/10.21037/jovs.2018.02.03

2020. gads. Torakoskopiska lobektomija.

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Komanda

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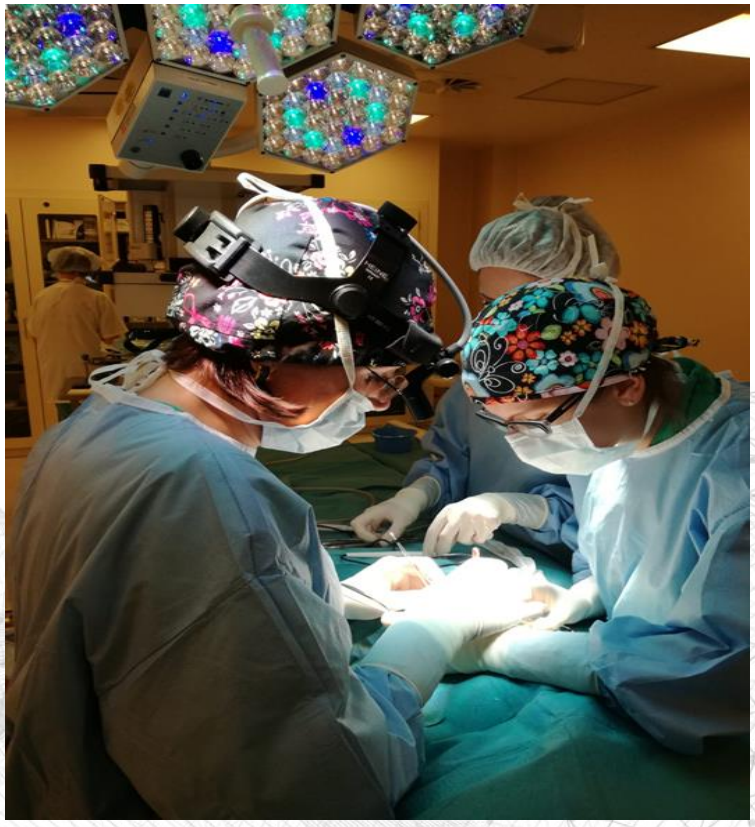

Komanda

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Komanda

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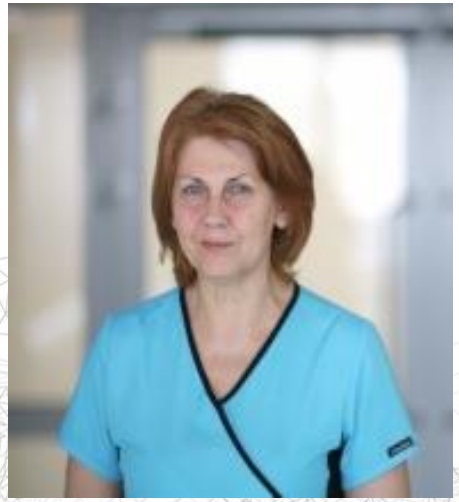

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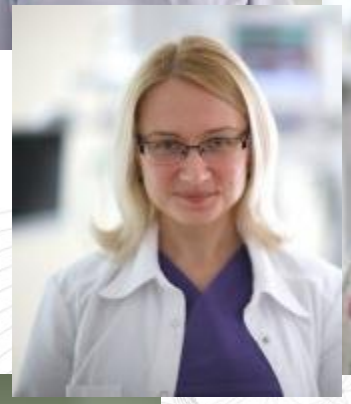





Attīstība!?

Journal of *Clinical Medicine*

MDPI

Review

Advances and Trends in Pediatric Minimally Invasive Surgery

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Received: 13 November 2020; Accepted: 3 December 2020; Published: 10 December 2020

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Abstract: As many meta-analyses comparing pediatric minimally invasive to open surgery can be found in the literature, the aim of this review is to summarize the current state of minimally invasive pediatric surgery and specifically focus on the trends and developments which we expect in the upcoming years. Print and electronic databases were systematically searched for specific keywords, and cross-link searches with references found in the literature were added. Full-text articles were obtained, and eligibility criteria were applied independently. Pediatric minimally invasive surgery is a wide field, ranging from minimally invasive fetal surgery over microlaparoscopy in newborns to robotic surgery in adolescents. New techniques and devices, like natural orifice transluminal endoscopic surgery (NOTES), single-incision and endoscopic surgery, as well as the artificial uterus as a backup for surgery in preterm fetuses, all contribute to the development of less invasive procedures for children. In spite of all promising technical developments which will definitely change the way pediatric surgeons will perform minimally invasive procedures in the upcoming years, one must bear in mind that only hard data of prospective randomized controlled and double-blind trials can validate whether these techniques and devices really improve the surgical outcome of our patients.

Keywords: pediatric surgery; minimally invasive surgery; fetal surgery; single-incision surgery; surgical techniques; surgical devices; open surgery; endoscopy; endoscopic surgery

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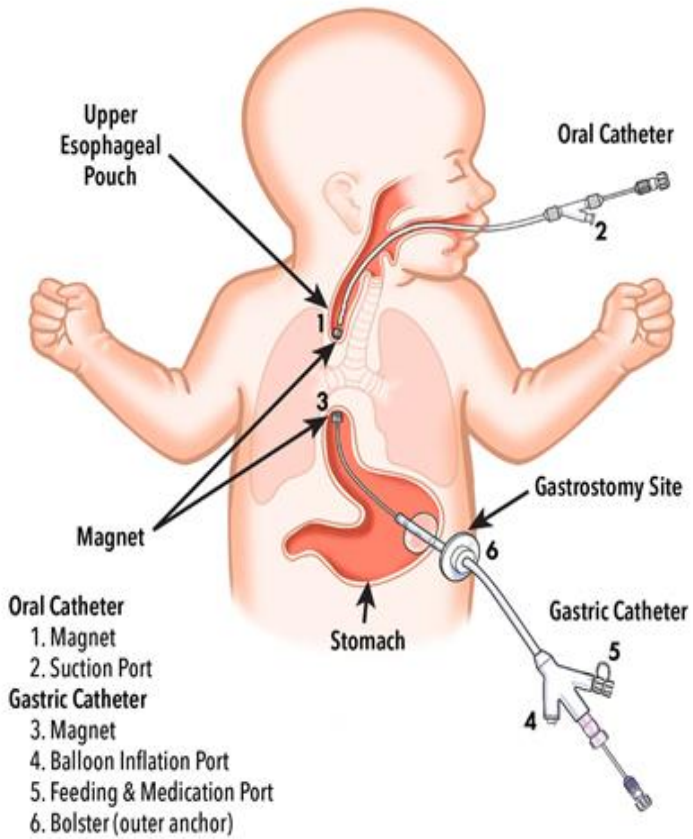
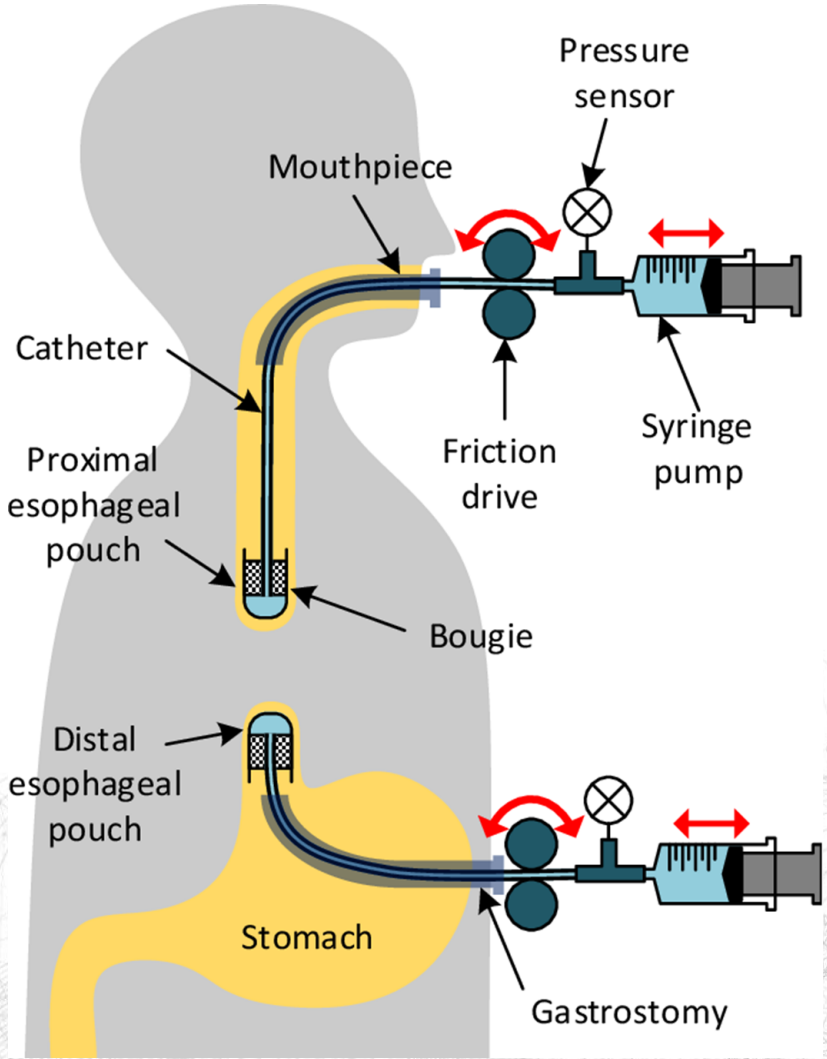
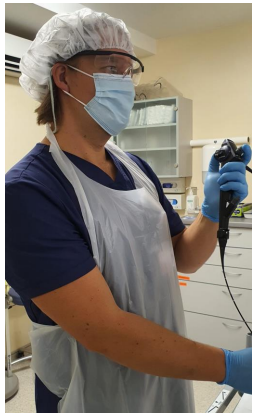

Upper Esophageal Pouch
Oral Catheter
2
1
3
Magnet
Gastrostomy Site
6
Stomach
Gastric Catheter
5
4
Oral Catheter
1. Magnet
2. Suction Port
Gastric Catheter
3. Magnet
4. Balloon Inflation Port
5. Feeding & Medication Port
6. Bolster (outer anchor)


Pressure sensor
Mouthpiece
Catheter
Proximal esophageal pouch
Friction drive
Syringe pump
Bougie
Distal esophageal pouch
Stomach
Gastrostomy



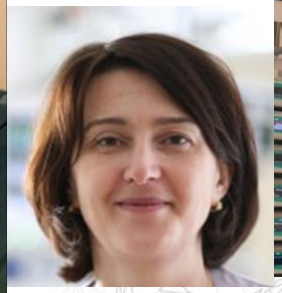
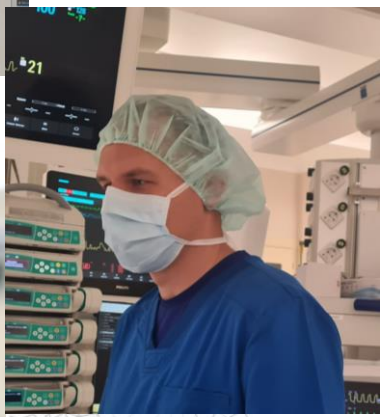
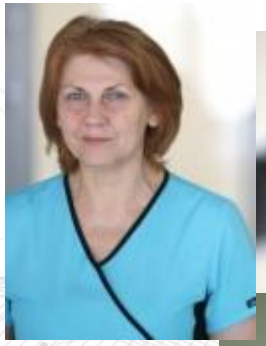




SIEME
Healthine

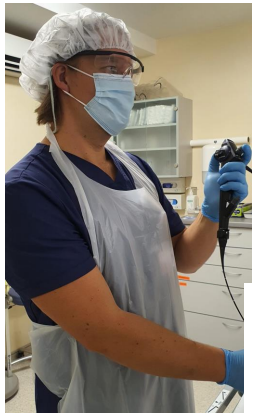




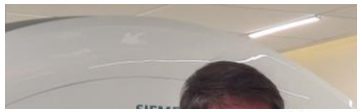
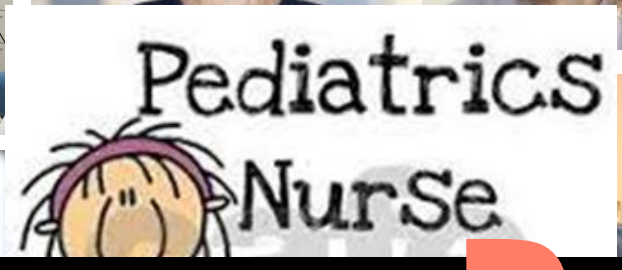




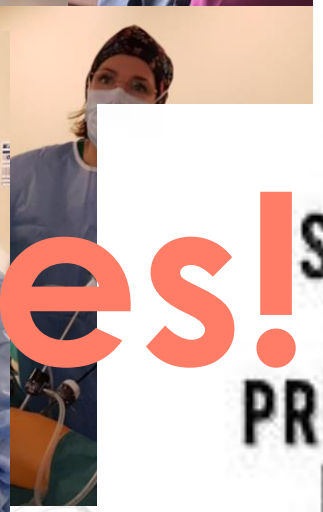






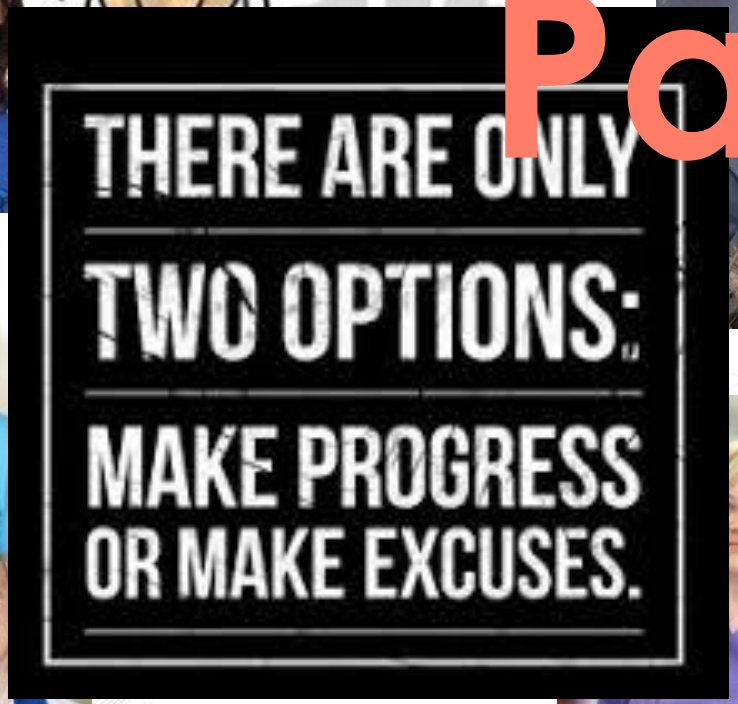







Paldies!

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