Tema 3. Atresia esofágica de long gap

Atresia de esófago

Planificar momento y tipo de cirugía

Prematuridad/Bajo peso
Dificultad ventilatoria
Cardiopatía
Malformaciones asociadas
Long Gap

Decisión periodo neonatal

Neonatólogo
Cirujano
Anestesista

N

Paciente estándar
Tratamiento en un tiempo

S

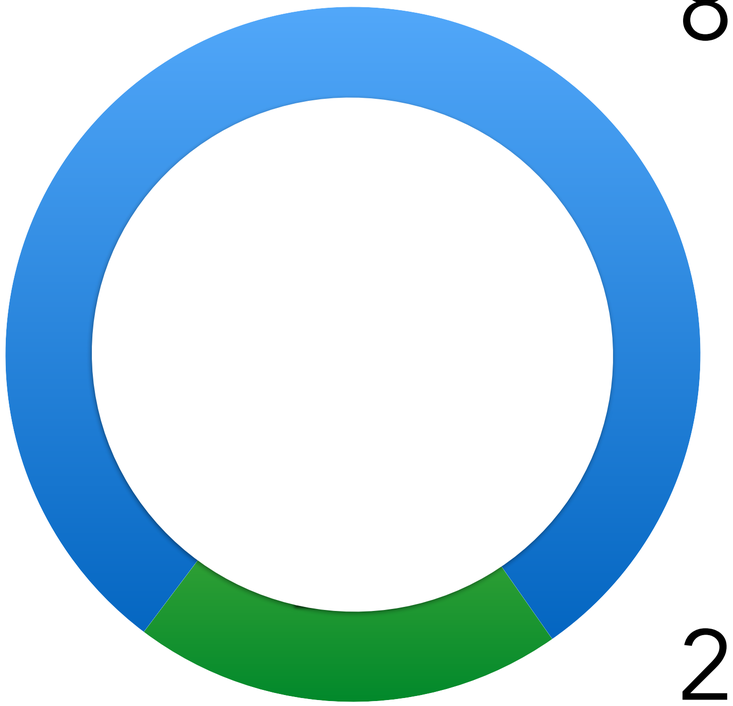
Paciente especial
Tratamiento diferido

Tema 3. Atresia esofágica de long gap

Atresia de esófago

Anastomosis primaria

80%

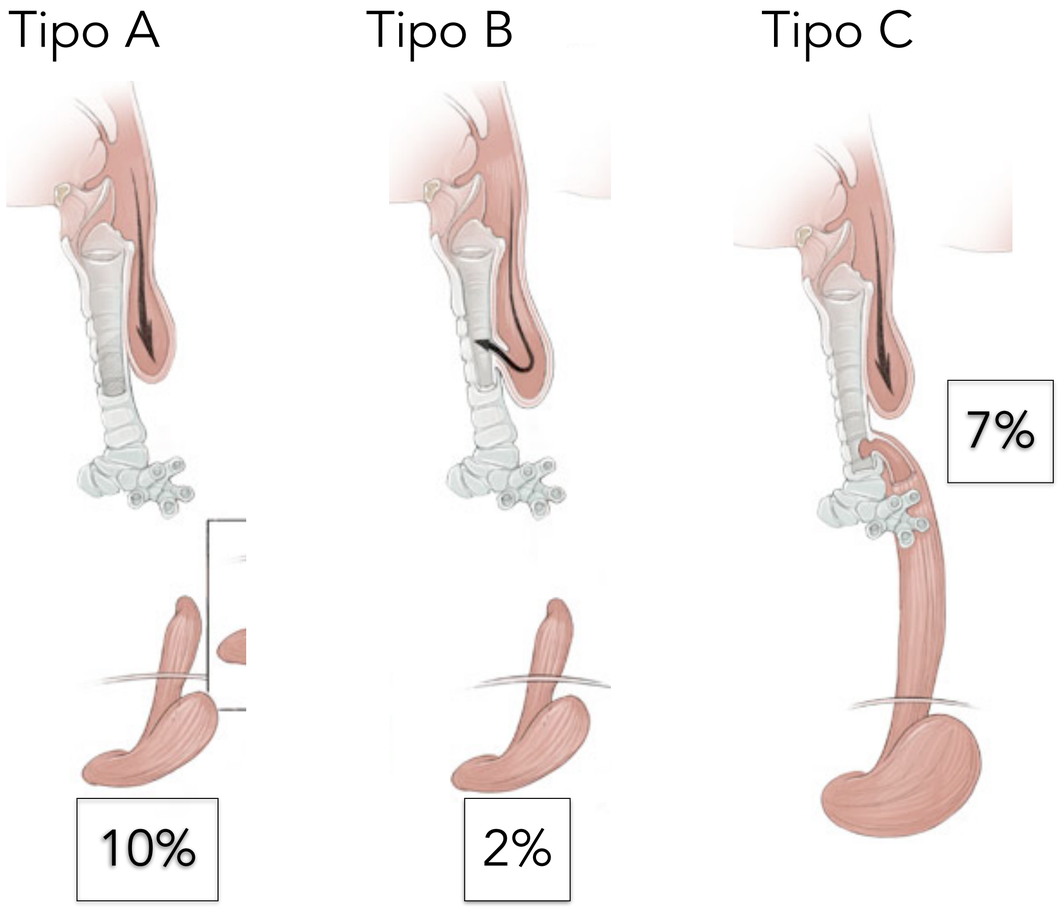


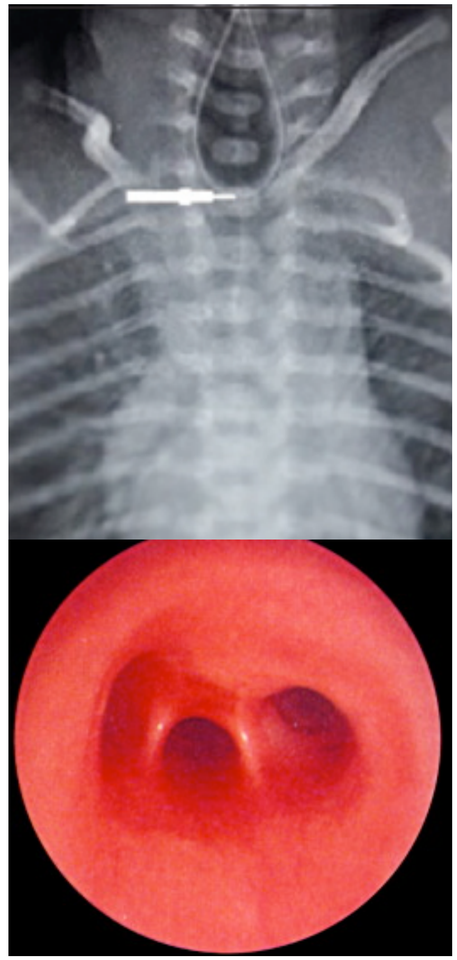
20%

Tratamiento diferido

Tema 3. Atresia esofágica de long gap

¿Cual tipo de atresia puede ser long gap?





¿Que se considera un long gap?

Authors – year	Long gap definition
Foker *et al.* – 1997[11]	>2.5 cm
Hirschl *et al.* – 2002[15]	>3 cm
Bagolan *et al.* – 2004[16]	≥3 cm or vertebral bodies
Spitz – 2006[17]	>6 vertebral bodies
Sri Paran *et al.* – 2007[18]	Pure esophageal atresia
Hadidi *et al.* – 2007[19]	>4–5 vertebral bodies
Upadhyaya *et al.* – 2007[14]	>2.1 cm (ultra long gap if >3.5 cm)
Al-Shanafey and Harvey – 2008[20]	. . . 'when primary anastomosis was not possible' . . .

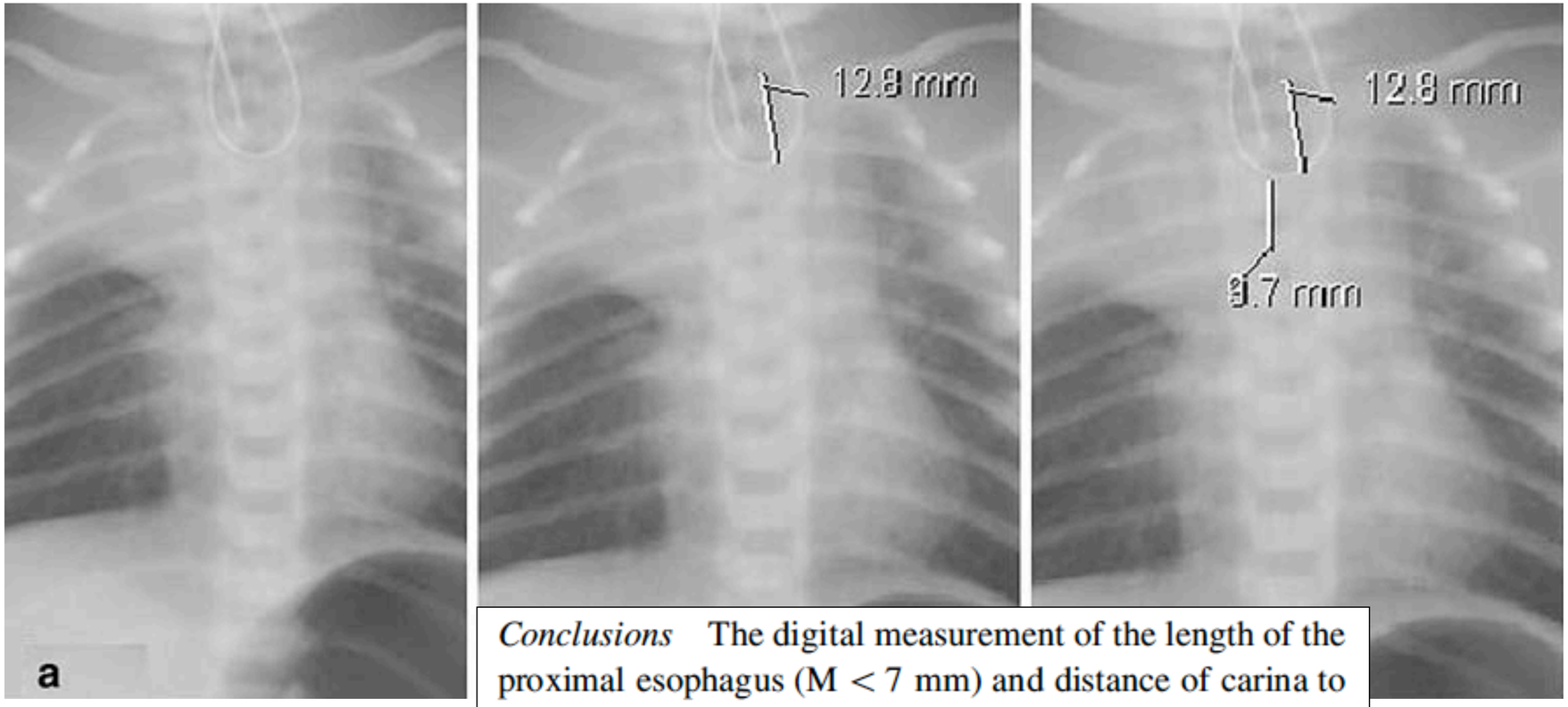
Concepto individual

Complicaciones del long gap

A Novel Technique for Risk Calculation of Anastomotic Leakage after Thoracoscopic Repair for Esophageal Atresia with Distal Fistula

David C. van der Zee · Daisy Vieirra-Travassos · Justin R. de Jong · Stefaan H. A. J. Tytgat

World J Surg (2008) 32:1396–1399



Conclusions The digital measurement of the length of the proximal esophagus (M < 7 mm) and distance of carina to proximal esophagus (M > 13.5 mm) with the use of PACS gives a good risk calculation for postoperative leakage.

Consecuencias de un long gap

Prognosis of congenital tracheoesophageal fistula with esophageal atresia on the basis of gap length

Vijay D. Upadhyaya · A. N. Gangopadhyaya · D. K. Gupta · S. P. Sharma · Vijayendra Kumar · Anand Pandey · Ashish D. Upadhyaya

Pediatr Surg Int (2007) 23:767–771

Gap length	No. of cases	Anastomotic leak	Stricture
Ultralong (>3.5 cm)	5	4 (80%)	1 (100%)
Long gap (>2 to <3.5 cm)	8	4 (50%)	3 (75%)
Intermediate gap (>1 to <2 cm)	18	5 (28%)	3 (22.5%)
Short gap (<1 cm)	19	2 (10.5%)	3 (19%)
Total (n = 50)	50	15 (30%)	10 (29%)

¿Que conlleva un long gap?

- ☑ Reparación esofágica diferida
- ☑ Tratamiento prolongado
- ☑ Precisará de más de una intervención
- ☑ Mayor morbimortalidad
- ☑ ***No existe un tratamiento unificado***

Incidencia de AE long gap

Prevalencia AE	**Natalidad España 2016**
1,8-2,4/10.000	(INE) 400.000 rnv

72-96 casos AE

47 unidades públicas CIRUGÍA PEDIÁTRICA
1,8 - 2,4 casos/año

LONG GAP 10%: 7-9 casos por año

un caso cada cinco años por cada servicio

Tratamiento atresia long gap

- Preservación esofágica
- Sustitución esofágica

Técnicas en atresias long gap

- **Preservación esofágica**
  - Elongación esofágica pasiva (Puri)
  - Elongación esofágica activa
    - Externa (Kimura)
    - Interna externa (Fokker)
    - Interna (Patowsky)

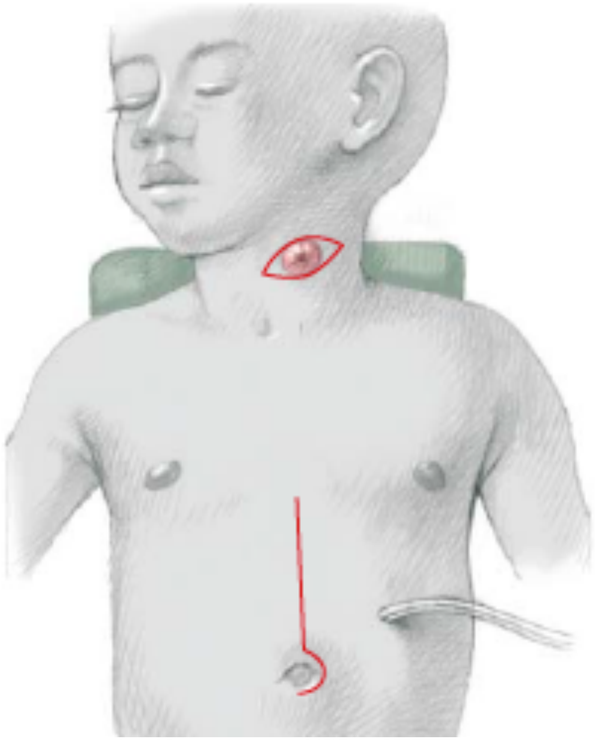
- **Sustitución esofágica**
  - Estómago
  - Intestino delgado
  - Cólon

Tema 3. Atresia esofágica de long gap

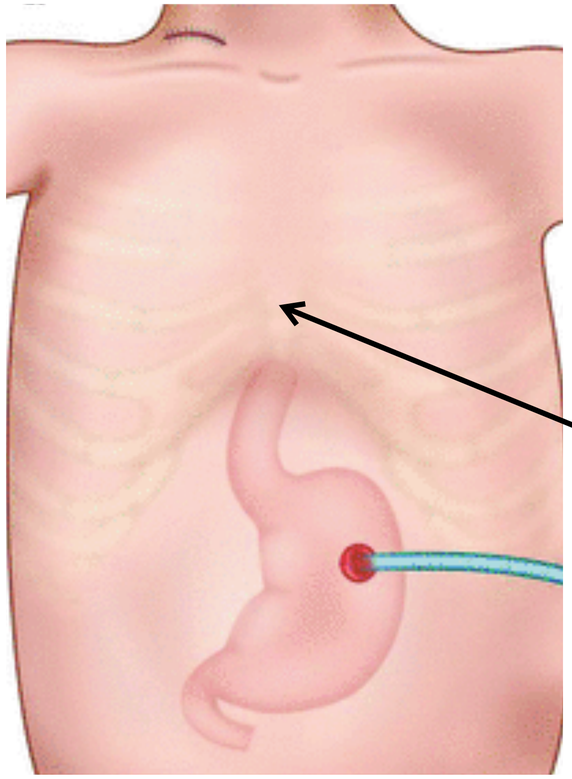
Sustitución esofágica

(lo primero que se hizo, lo último que se debe hacer,

1.- Al nacimiento



Esofagostomía + Gastrostomía



2.- Al año

Cólon

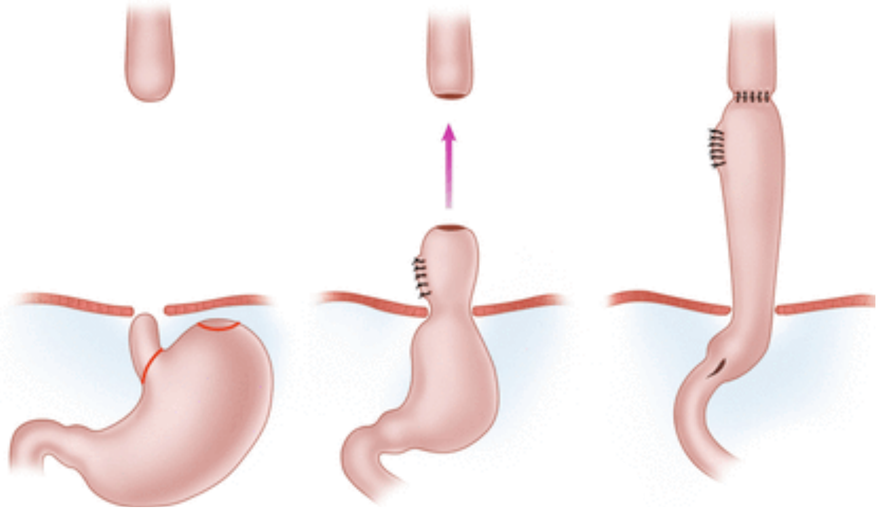
Estómago

Intestino delgado

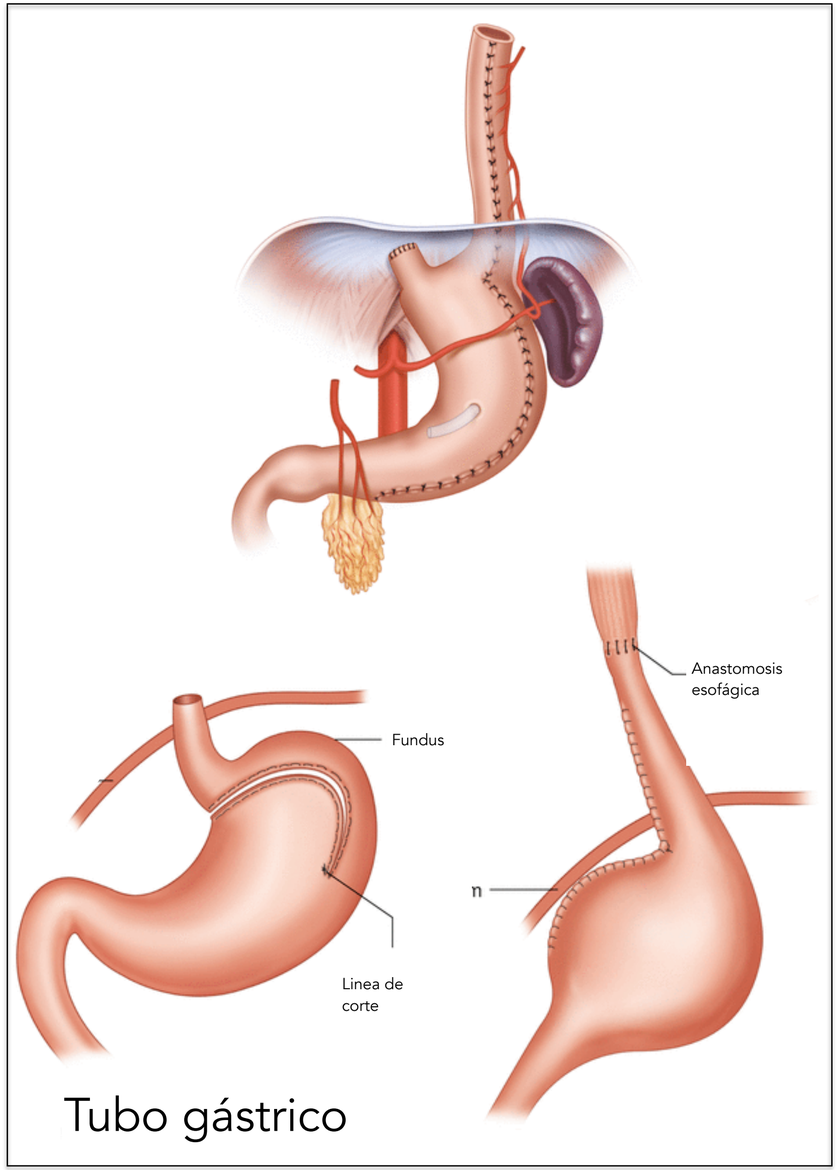
Tema 3. Atresia esofágica de long gap

Sustitución esofágica

Estómago



Ascenso gástrico



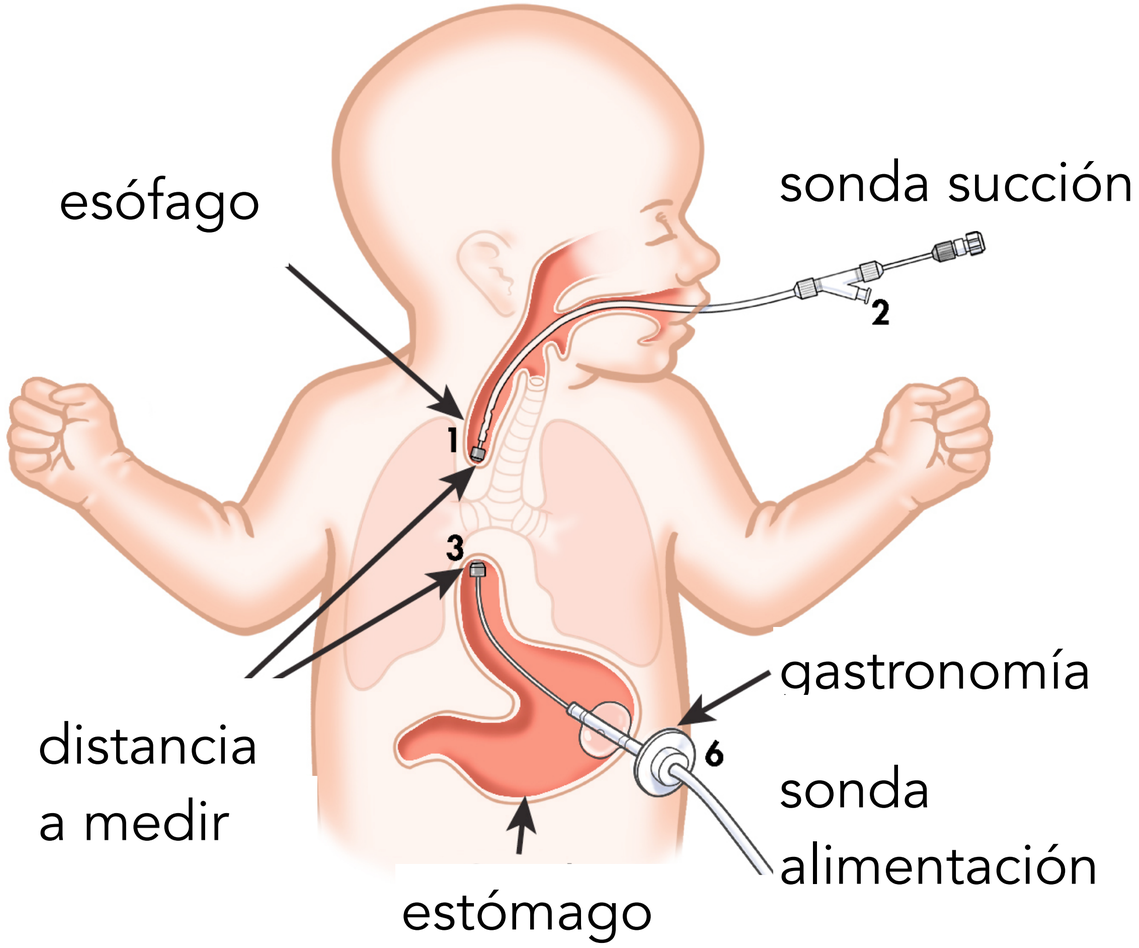
Tubo gástrico

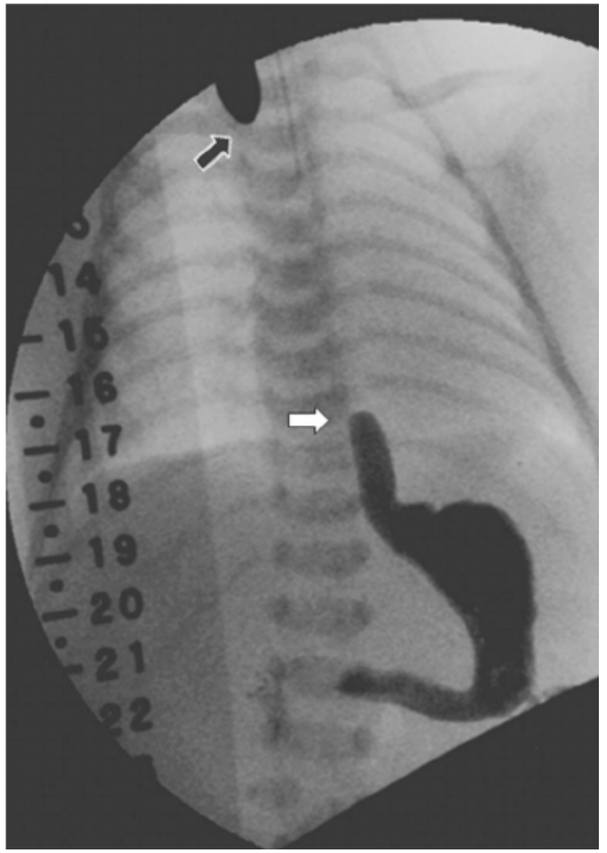
Sustitución esofágica

Cólon

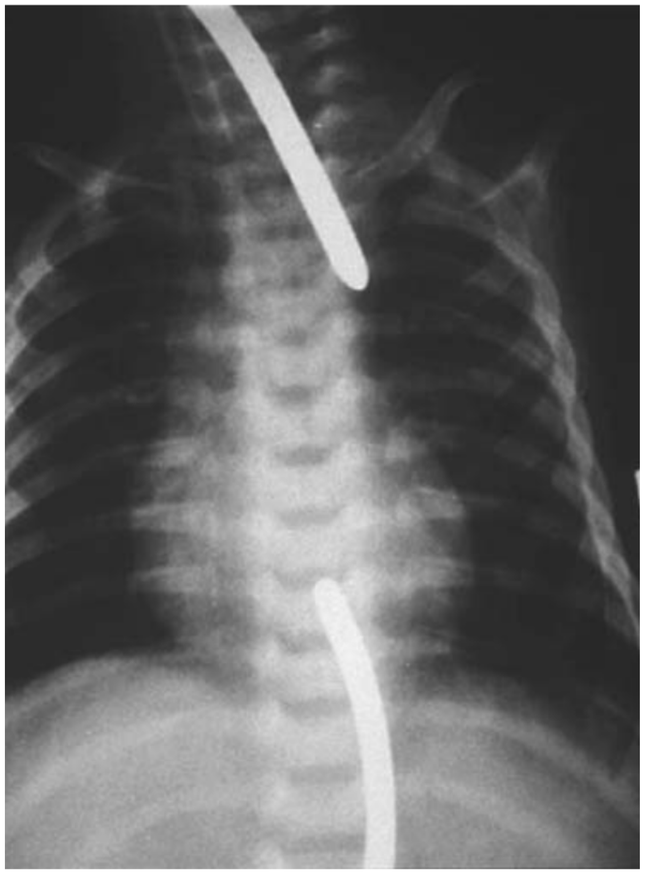
Tema 3. Atresia esofágica de long gap

Elongación esofágica pasiva (Puri)





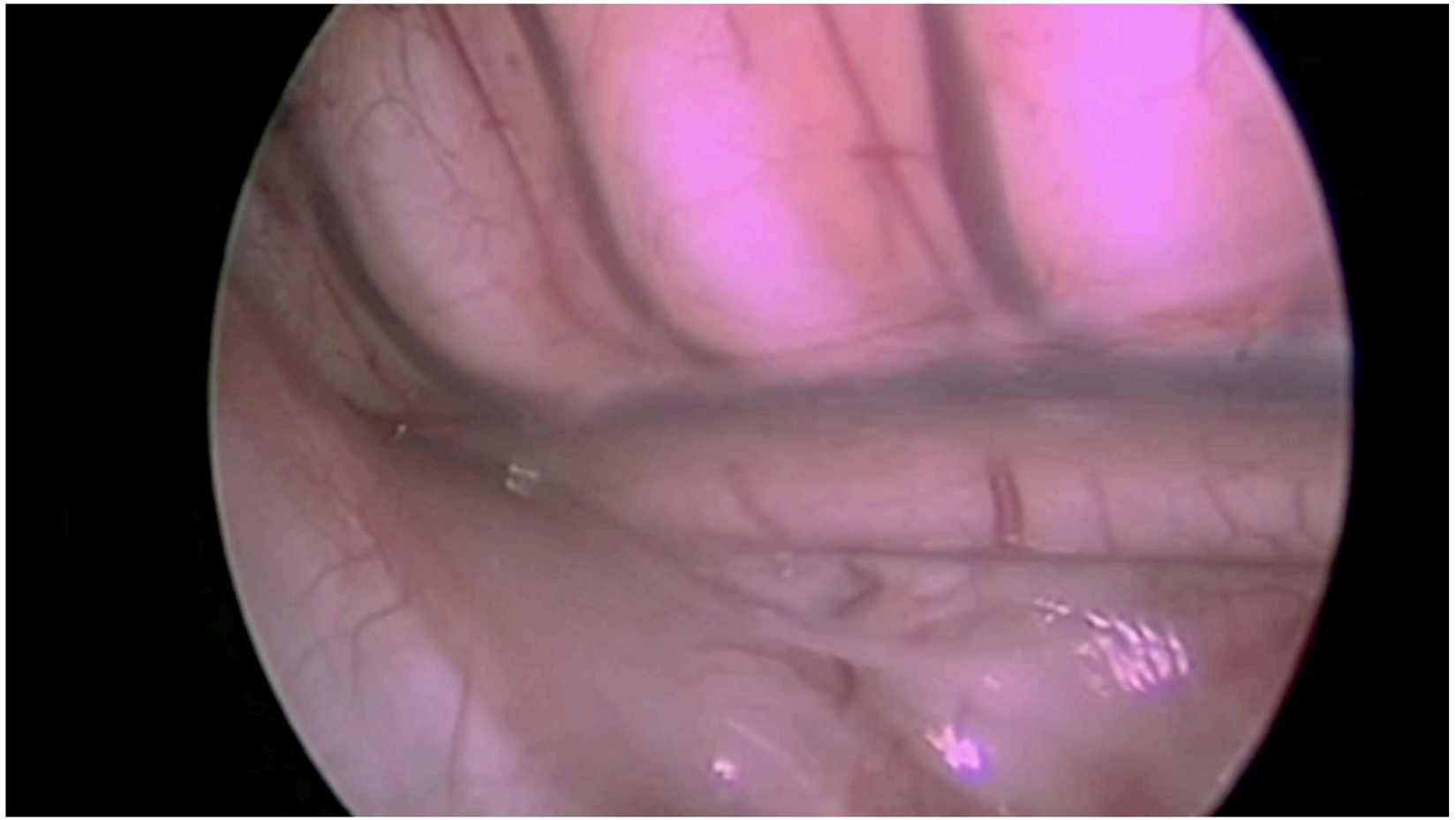
Elongacion esofagica pasiva (Puri)



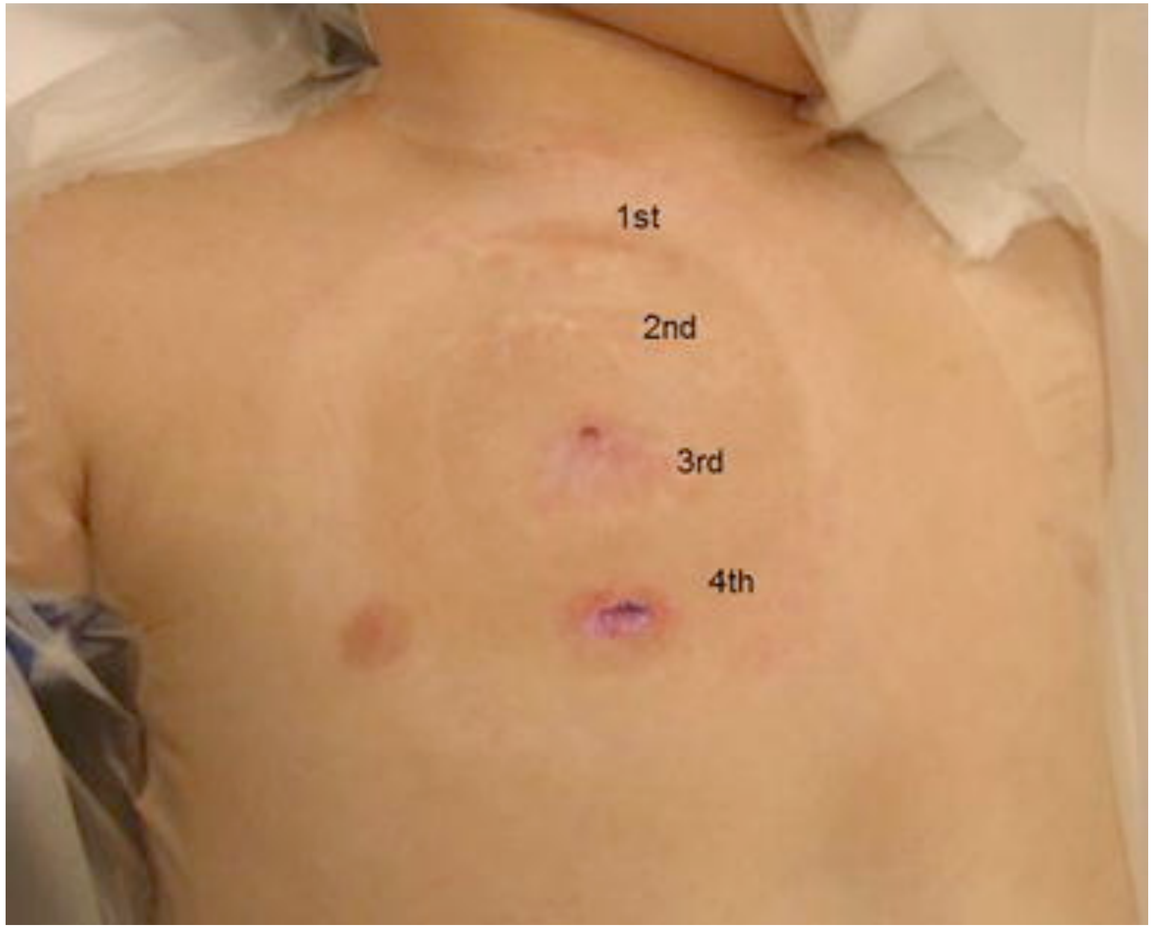
Crecimiento espontáneo del esófago

3 semanas ⟵ Mediciones seriadas ⟶ 18 semanas

Elongación esofágica pasiva (Puri)

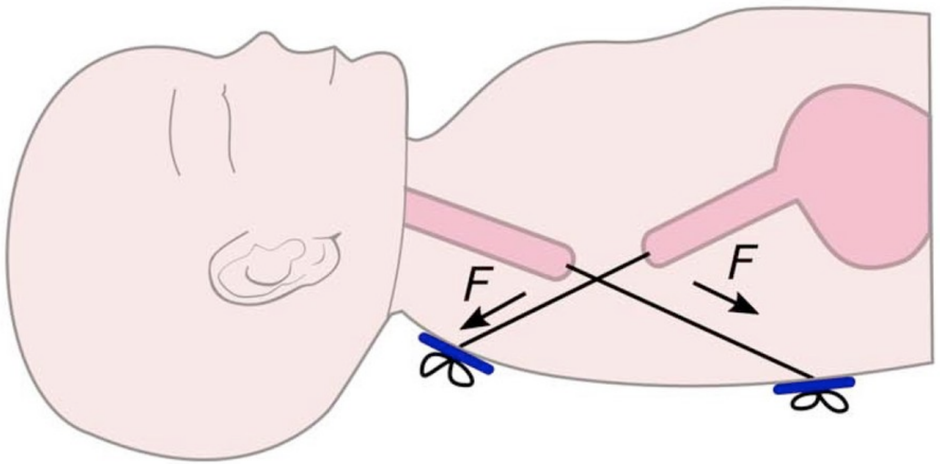


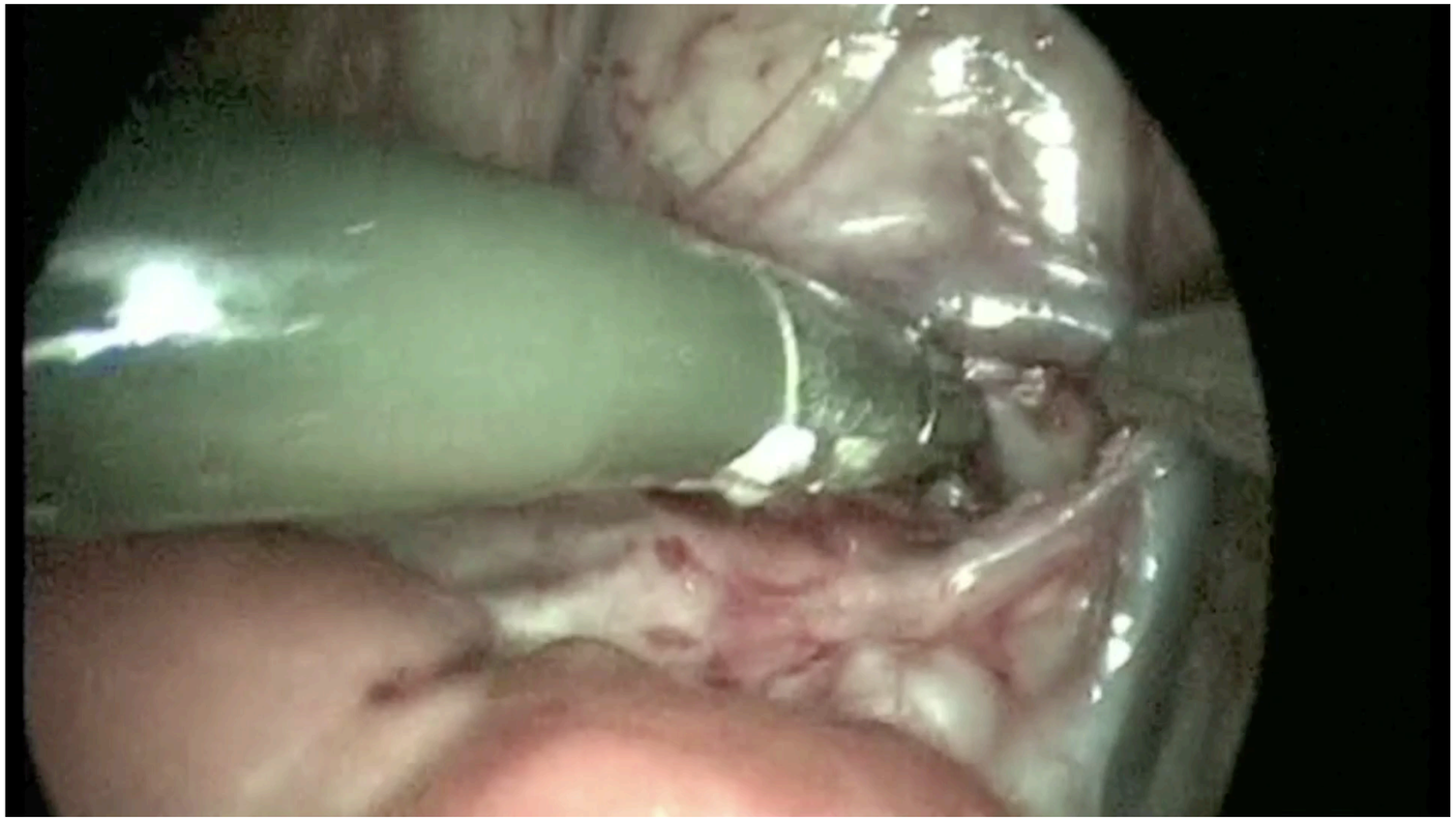
Elongación esofágica activa externa (Kimura)



Elongación esofágica activa interno-externa (Fokker)

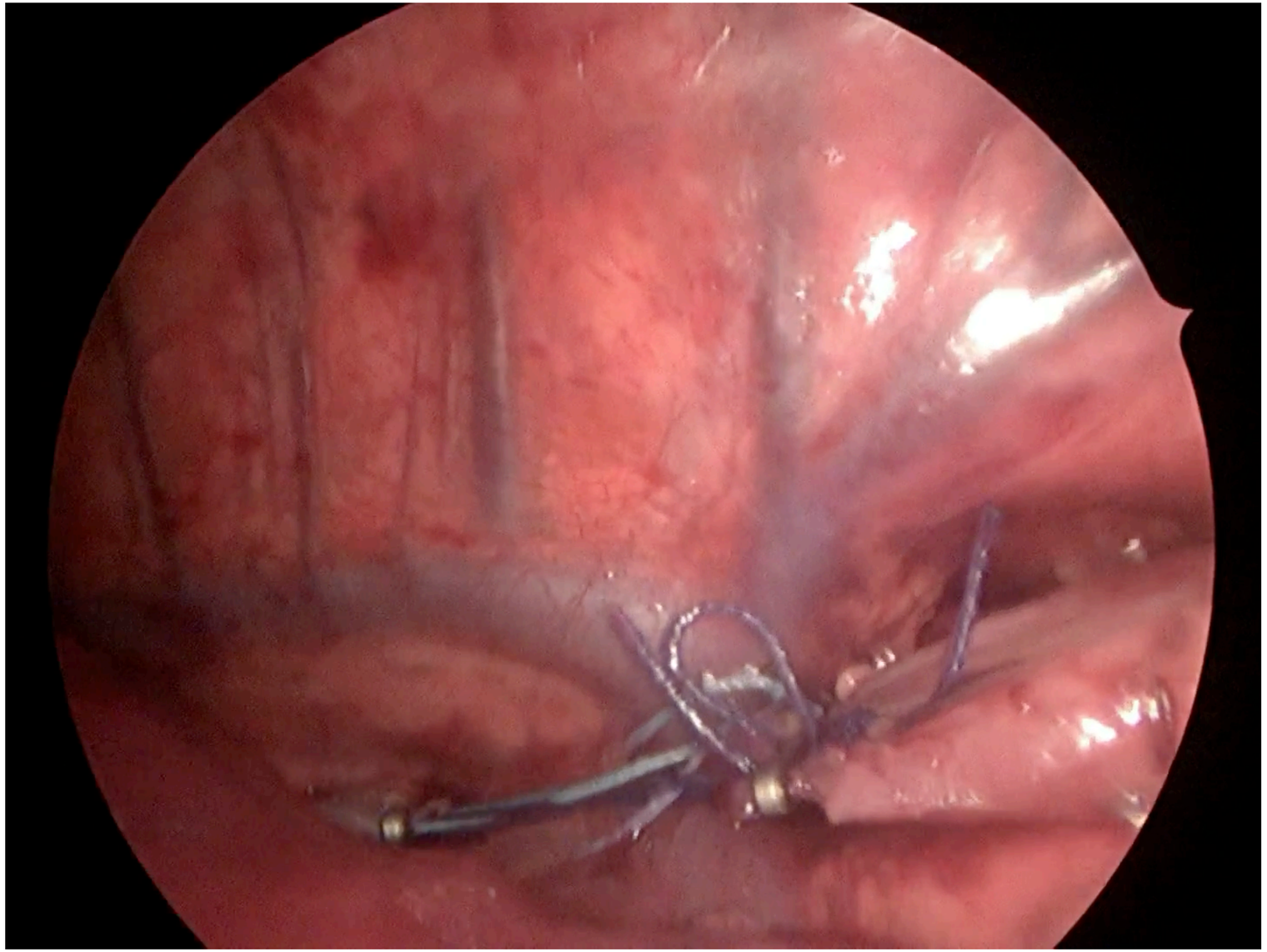
Fokker (toracotomía)





Fokker (toracoscopia)

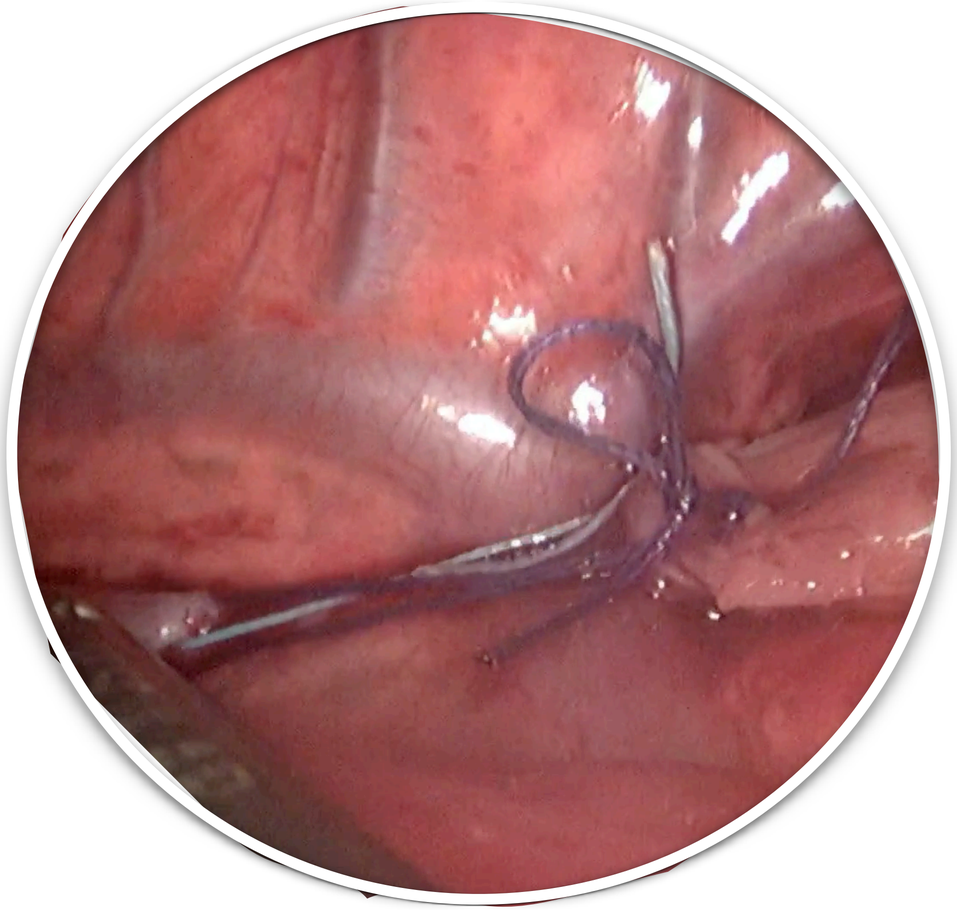
Tema 3. Atresia esofágica de long gap



Elongación esofágica activa interna (Patowsky)

Elongación esofágica activa interna (Patowsky)

- ☑ No se realiza gastrostomía (RGE)
- ☑ 2-3 intervenciones, cada 4 días
- ☑ Sedación prolongada



Tema 3. Atresia esofágica de long gap

	Técnica neonatal	Problema	Complicaciones	Resultados positivos
Puri Anastomosis diferida	Gastrostomia sin esofagostomia	Ingreso prolongado 3m	Aspiración Infecciones	70 %
Foker Elongación interna	Gastrostomia sin esofagostomia	Tracción no controlada	Rotura esófago	60 %
Patowsky Elongación interna	No gastrostomia No esofagostomia	Técnicamente compleja Varias cirugías	Ascenso gástrico	80 %

Tema 3. Atresia esofágica de long gap

J Pediatr Surg. 2019 Apr;54(4):675-687.

Management of long gap esophageal atresia: A systematic review and evidence-based guidelines from the APSA Outcomes and Evidence Based Practice Committee

Robert Baird 1 , Dave R Lal 2 , Robert L Ricca 3 , Karen A Diefenbach 4 , Cynthia D Downard 5 , Julia Shelton 6 , Stig Sømme 7 , Julia Grabowski 8 , Tolulope A Oyetunji 9 , Regan F Williams 10 , Tim Jancelewicz 10 , Roshni Dasgupta 11 , L Grier Arthur 12 , Akemi L Kawaguchi 13 , Yigit S Guner 14 , Ankush Gosain 15 , Robert L Gates 16 , Juan E Sola 17 , Lorraine I Kelley-Quon 18 , Shawn D St Peter 19 , Adam Goldin 20

Results: More than 3000 publications were reviewed, with 178 influencing final recommendations. In total, 18 recommendations are provided, primarily based on level 4-5 evidence. These recommendations provide detailed descriptions of the definition of LGEA, treatment techniques, outcomes and future directions of research.

Conclusions: Evidence supporting best practices for LGEA is currently low quality. This review provides best recommendations based on a critical evaluation of the available literature. Based on the lack of strong evidence, prospective and comparative research is clearly needed.

Tema 3. Atresia esofágica de long gap

Practice Guideline. Eur J Pediatr Surg. 2021 Jun;31(3):214-225.

ERNICA Consensus Conference on the Management of Patients with Long-Gap Esophageal Atresia: Perioperative, Surgical, and Long-Term Management.

Carmen Dingemann 1 , Simon Eaton 2 , Gunnar Aksnes 3 , Pietro Bagolan 4 , Kate M Cross 5 , Paolo De Coppi 2 5 , JoAnne Fruithof 6 , Piergiorgio Gamba 7 , Imeke Goldschmidt 8 , Frederic Gottrand 9 , Sabine Pirr 10 , Lars Rasmussen 11 , Rony Sfeir 12 , Graham Slater 13 , Janne Suominen 14 , Jan F Svensson 15 , Joergen M Thorup 16 , Stefaan H A J Tytgat 17 , David C van der Zee 17 , Lucas Wessel 18 , Anke Widenmann-Grolig 19 , René Wijnen 20 , Wilhelm Zetterquist 21 , Benno M Ure 1

Results: Ninety-seven items were generated. Complete consensus (100%) was achieved on 56 items (58%), e.g., **avoidance of a cervical esophagostomy, promotion of sham feeding,** details of delayed anastomosis, **thoracoscopic pouch mobilization and placement of traction sutures as novel technique,** replacement techniques, and follow-up. Consensus ≥75% was achieved on 90 items (93%), e.g., definition of long gap, routine pyloroplasty in gastric transposition, and avoidance of preoperative bougienage to enable delayed anastomosis. **Nineteen items (20%), e.g., methods of gap measurement were discussed controversially (range 1-9).**

J. Surgical Research. 2020. (251) 47-52

Tema 3. Atresia esofágica de long gap

Outcomes for Correction of Long-Gap EsophagealAtresia: A 22-Year Experience.

Amanda R. Jensen, MD, MS,a,b,*Lucas A. McDuffie, MD,a,bEric M. Groh, MD,a,band Frederick J. Rescorla, MDa,b,c

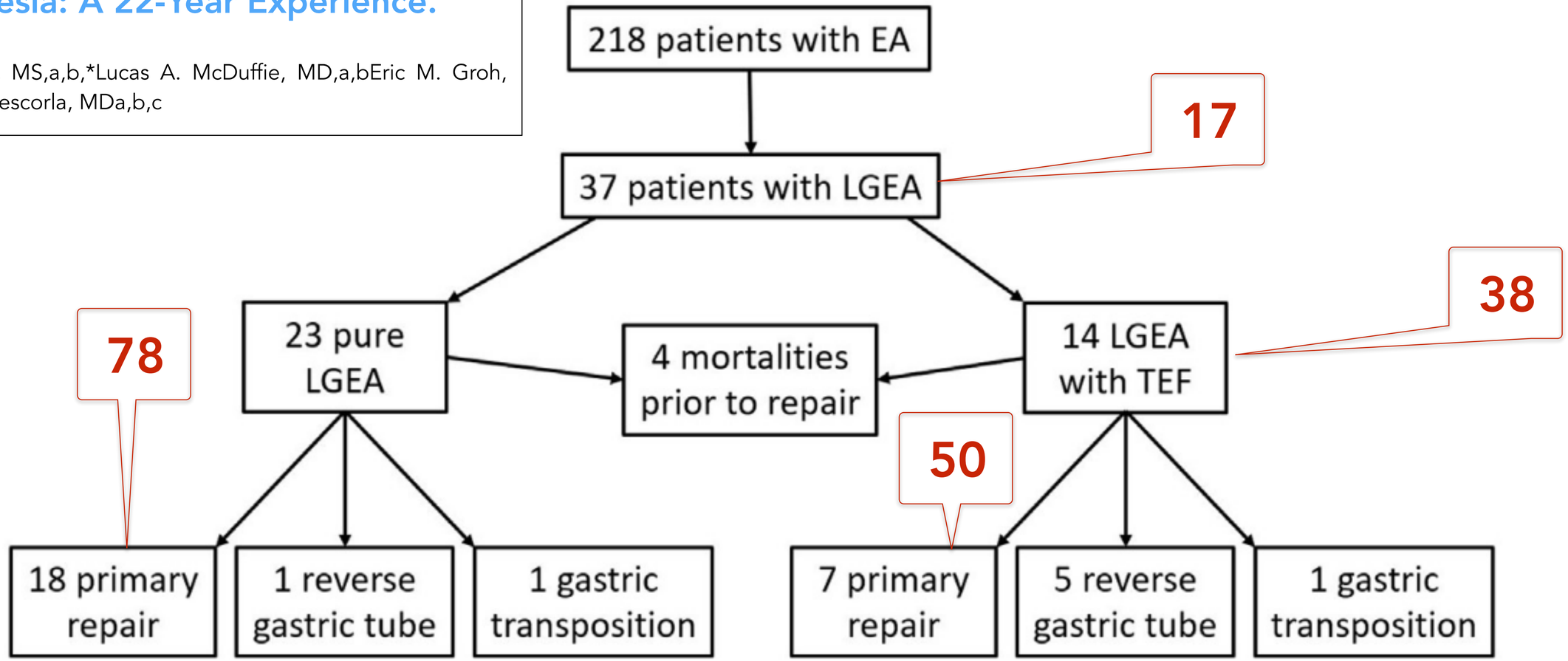


Fig. 2 – Flow diagram of patients with long gap esophageal atresia.

Tema 3. Atresia esofágica de long gap

Published:August 01, 2022DOI:https://doi.org/10.1016/j.jpedsurg.2022.07.023

AgateBourga,⁎,FrédéricGottrandb, BenoitParmentiera, JulieThomasa, AnneLehnc, ChristianPiolatd, ArnaudBonnarde, RonySfeirf, JulieLienardg, VéroniqueRousseauh, MyriamPouzaci, AgnèsLiardj, PhilippeBuissonk, AuroreHaffreinguel, LouisDavidm, SophieBranchereaun, VéroniqueCarcauzono, NicolasKalfap,Marc-DavidLeclairq, HubertLardyr, SabineIrtans, FrançoisVarlett,T homasGelasu, DianaPotopa, MarieAuger-Hunaulta

Outcome of long gap esophageal atresia at 6 years: A prospective case control cohort study

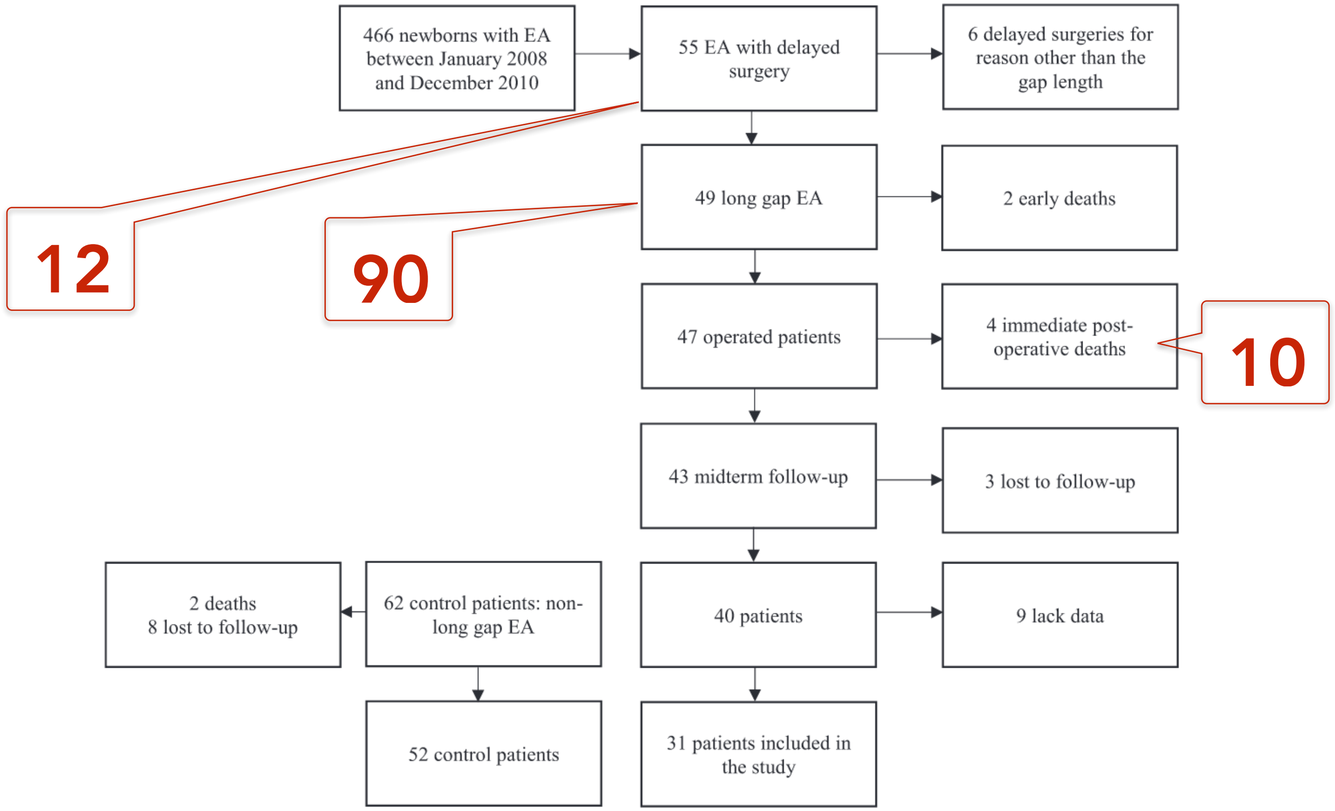


Fig. 1. flowchart of the study.

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Published:August 01, 2022DOI:https://doi.org/10.1016/j.jpedsurg.2022.07.023

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Outcome of long gap esophageal atresia at 6 years: A prospective case control cohort study

Table 4
Characteristics and outcomes of "native esophagus conservation" and "esophagus replacement" in long gap EA group.

Characteristics	Native esophagus $N = 33$	Esophagus replacement $N = 14$	P-value
Median term in gestational age (range)	36 (26.8; 39.8)	37 (31; 41)	0.23
Median birth weight in grams (range)	2072 (1040; 3740)	2459 (550; 3025)	**0.04** *
Associated anomalies (%)	15 (45)	9 (64)	0.34
Cardiac malformations (%)	7 (21)	4 (28)	0.46
VACTERL (%)	7(21)	4 (28)	0.46
Ladd classification (%)	type I 25 (76)	type I 10 (71)	0.46
	type II 3 (9)	type II 2 (14)	
	type III 4 (12)	type III 2 (14)	
	type IV 1 (3)	type IV 0 (0)	

13%

Tema 3. Atresia esofágica de long gap

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AgateBourga,⁎,FrédéricGottrandb, BenoitParmentiera, JulieThomasa, AnneLehnc, ChristianPiolatd, ArnaudBonnarde, RonySfeirf, JulieLienardg, VéroniqueRousseauh, MyriamPouzaci, AgnèsLiardj, PhilippeBuissonk, AuroreHaffreinguel, LouisDavidm, SophieBranchereaun, VéroniqueCarcauzono, NicolasKalfap,Marc-DavidLeclairq, HubertLardyr, SabineIrtans, FrançoisVarlett,T homasGelasu, DianaPotopa, MarieAuger-Hunaulta

Outcome of long gap esophageal atresia at 6 years: A prospective case control cohort study

Table 5
Outcomes at one year and 6 years of "esophagus replacement" and "native esophagus conservation" in long-gap EA group.

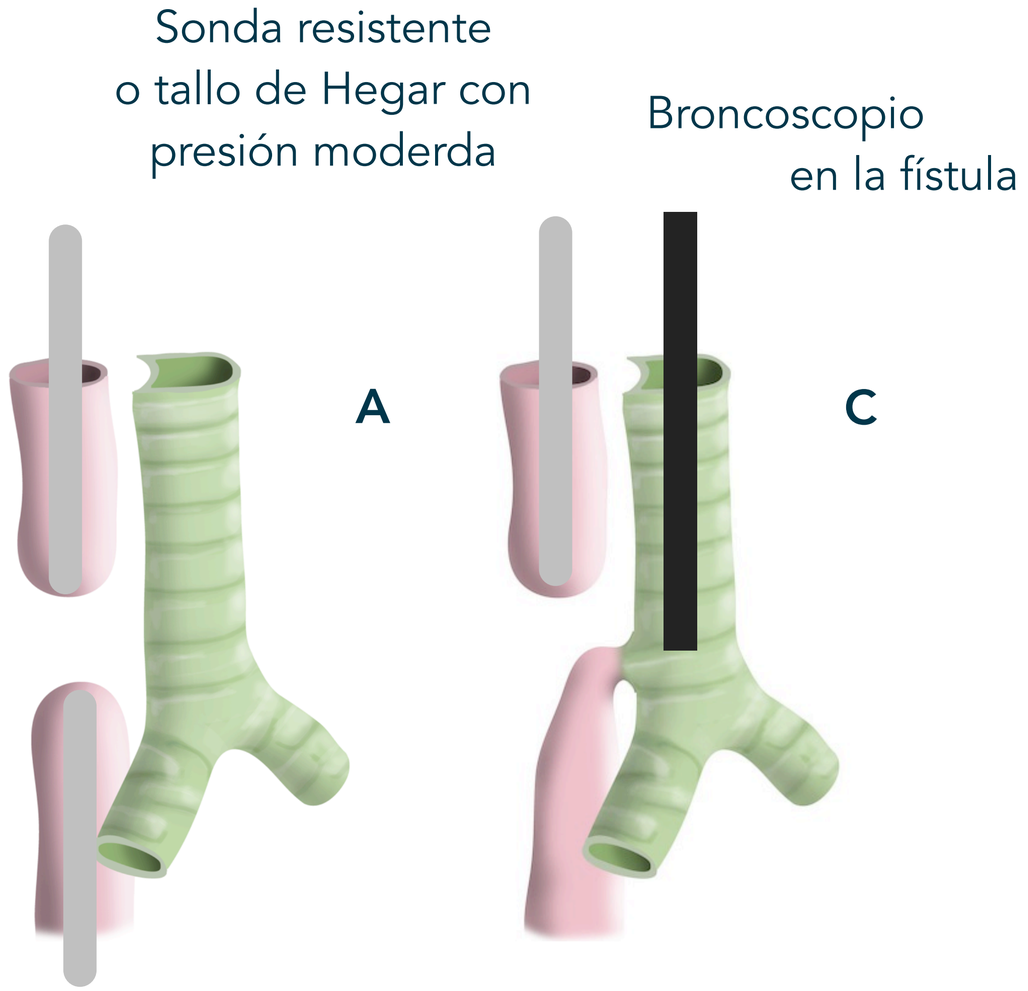
Characteristics	Esophagus conservation $n = 32$	Esophagus replacement $n = 13$	*P*-value
1 YEAR			
Weight (grams)	8128	8106	0.99
Readmission (%)	25 (78%)	13 (100%)	0.06
Number of readmission median (ranges)	2.5 (0; 6)	3 (1; 7)	0.96
Median readmission duration in days (extreme)	9 (0; 148)	13 (0; 114)	0.51
Total length of stay in days during the first year (extreme)	152 (86; 365)	160 (70; 365)	0.43
Anti-reflux surgery	17 (53%)	6 (46%)	0.67
GERD	25/32 (78%)	5/12 (42%)	**0.009**
Dysphagia	9/31 (29%)	3/12 (25%)	0.73
Exclusive oral feeding	16 (50%)	4 (31%)	0.25
Intercurrent respiratory event	9 (28%)	5 (38%)	0.74
Respiratory treatment	9/28 (32%)	6/13 (46%)	0.25
6 YEARS	$n = 22$	$n = 9$	
Lost to follow-up since age one year	10	4	
Weight (grams) mean	24.6 (SD)	24.4	0.9
FOIS (mean)	6	6	0.33
GERD	6	4	0.36
Undernutrition	16	8	0.34
Dysphagia	14	3	0.13
Asthma	8	2	0.46

Tema 3. Atresia esofágica de long gap

Protocolo de estandarización

- Rx. primera cirugía
- Edad gestacional
- Peso
- Medida en cm/placa standard
- Decisión según gap

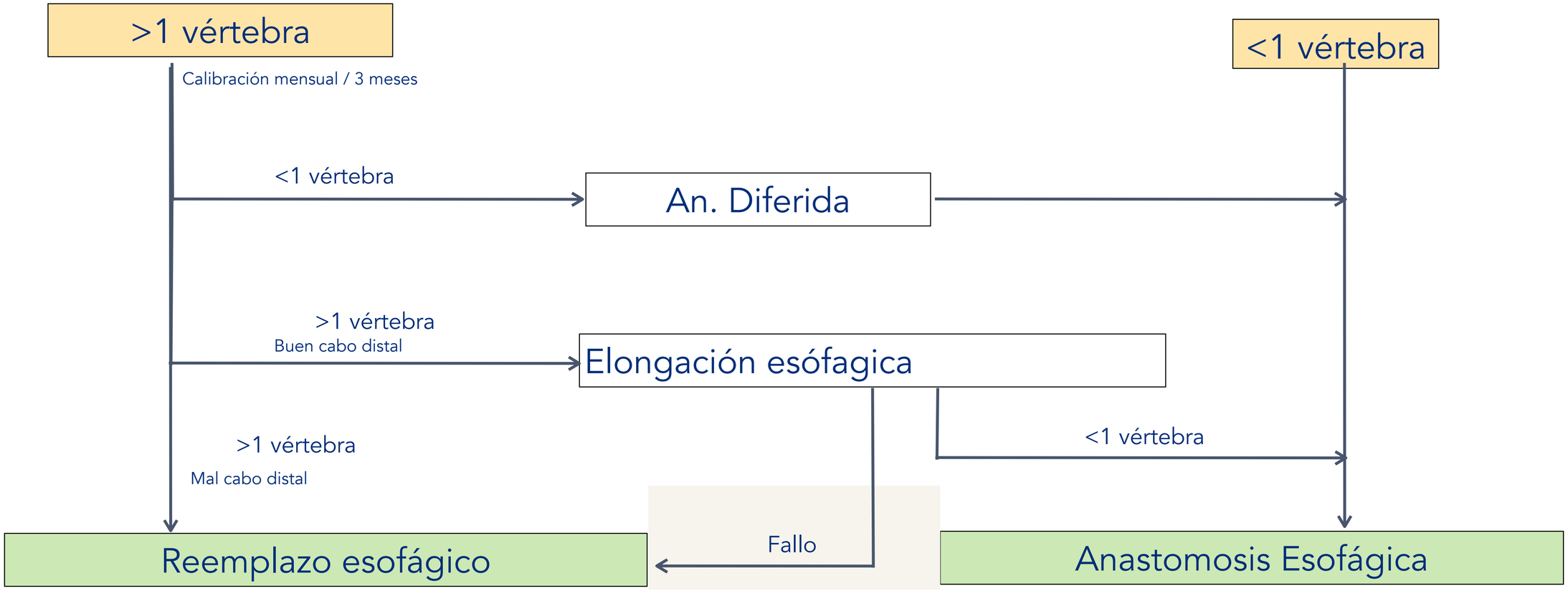
- Resultados quirúrgicos
  - Dehiscencia
  - Refistulización
  - Estenosis



Tallo de hegar por gastrostomia

Tema 3. Atresia esofágica de long gap

Algoritmo. Atresia tipo A



Tema 3. Atresia esofágica de long gap