Robotics in paediatric surgery

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Robotics in paediatric surgery

- urology
- GI-surgery
- thoracic surgery
- laryngotracheal surgery

Robotics in paediatric urology

- pyeloplasty
- ureteral reimplantation
- abdominal undescended testes
- partial/total nephrectomy
- bladder augmentation
- appendocivesicostomy
- antegrade continence enema-creation

Robotics in paediatric GI-surgery

- fundoplication
- cholecystectomy
- splenectomy
- proctocolectomy + IPAA
- tumor resections
- bowel resections
- repair of congenital anomalies

  bowel atresia, malrotation

  hepatobiliary anomalies

Robotics in paediatric thoracic surgery

- tumor resections
- lobe/segment resections
- congenital diaphragmatic hernia repair

- Atrial septal defect repair

Robotics in infants

Distribution of Robotic Procedures in 45 Children Less Than 10 kg (*JJ Meehan, Seattle)*

Procedure		N	Completed
Fundoplication	With G-tube (11); without G-tube (14)	25	25
Neuroblastoma		2	2
Kasai		2	2
Doudenal atresia		1	1
Resection of gastric duplication		1	0
Pyloroplasty		1	1
Bochdalek CDH repair		4	3
Lobectomy=segmentectomy	CCAM (2); intralobar sequestration (3)	5	4
Bronchogenic cyst		2	2
Eventration		2	1
Esophageal atresia with TEF		1	1
Cystic hygroma		1	0
Total		47	42

CDH, congenital diaphragmatic hernia; CCAM, congenital cystic adenomatoid malformation; TEF, tracheoesophageal fistula.

Robotics in paediatric surgery

- outcome similar as in laparoscopic surgery
- operative time same/shorter as in laparoscopic surgery
- 5-8mm robotic ports enable procedures down to patients weight of 2,5 kg
- 12 mm 3D camera port can be used in children > 10kg
- learning curve steeper than in standard laparoscopic surgery
- suturing much easier than in standard laparoscopic procedures
- about 15 cases required for proficiency, significantly less than in laparoscopic procedures

- main drawbacks:

  high cost

  no paediatric instrumentation

  increased theatre time (vs open, standard laparoscopic procedures)

  lack of tactile feedback