

Our three year experience with robot- assisted laparoscopic surgery

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Introduction: Robot-assisted surgery was introduced recently in our pediatric facility. The aim of this study is to describe the demographics of and to identify complications and specific outcomes of patients that had robot-assisted laparoscopy in our pediatric facility over the past 3 years.

Materials and Methods: After IRB approval was obtained, a retrospective review of the charts of patients who had robot-assisted laparoscopic procedures in the past 3 years was done. The following data were collected: age, gender, weight, ASA physical status, date and type of the surgical procedure. Intraoperative data collected included turnover time (TOTS), TOTS to surgical incision, and duration of surgery. Complications that were considered include: conversion to regular laparoscopy or open procedure, accidental extubation, hypotension or arrhythmias requiring medical intervention. The total time spent in the hospital and whether the patients required admission postoperatively in the intensive care unit was also recorded. All procedures were performed using the da VinciTM robotic system by 3 experienced pediatric surgeons. All patients had general endotracheal anesthesia and were transferred to postanesthesia care unit postoperatively.

Results: There were 92 robot-assisted laparoscopic procedures performed by three pediatric surgeons in our hospital from April 2003 to February 2006. The majority of patients (75/92) were discharged home by the third postoperative day, with a total of 82 out of 92 patients discharged by postoperative day 6.

Procedure	N	Sex M/F	Age (years)	Weight (kg)	ASA Physical Status Classification	TOTS (minutes)	TOTS to incision (minutes)	Surgery time (minutes)
Nissen funduplication	54	33/21	5 mos-20	5.9-86.6	11/17/25	8-62 (mean=16.98)	4-43 (mean=19.18)	62-274 (mean=144.03)
Hiatal Hernia	4	1/3	12-18	35-81.8	0/2/2	11-25	19-27	251-377
Heller Myotomy	3	2/1	6-14	20.2-45	0/3/0	8-21	14-32	186-319
Esophageal duplicate	2	2/0	9 mo, 13	11, 122	0/2/0	25, 29	23, 21	62, 133
Cholecystectomy	17	12/5	10-20	29-110	3/13/1	10-19 (mean=13.56)	9-32 (mean=15.87)	74-150 (mean=110.43)
Bronchial cyst	1	0/1	15	64.2	1/0/0	30	22	103
Adrenalectomy	1	1/0	2	9.4	0/1/0	31	21	187
Aortopexy	1	0/1	11	27	0/0/3	19	23	228
Appendectomy	1	1/0	12	53	1/0/0	15	11	56
Diaphragmatic Hernia	1	1/0	15 mos	12.5	0/1/0	17	20	193
Ileoanal Pullthrough	2	2/0	4-10 mos	5.9 7.6	0/1/1	21-33	22-24	198-200
Splenectomy	4	1/3	3-12	15-51.6	0/3/1	13-20	19-27	149-240
Pyloroplasty	1	1/0	9	34.5	0/1/0	13	35	152
TOTAL	92	57/35	4 mos - 20	5.9-122	16/62/33	8-62	4-43	56-377

Complications:

3 conversions to open approach: 2 due to technical difficulties and one due to patients' progressive metabolic acidosis

2 conversions to conventional laparoscopy: one due to robot malfunction and one due to accidental extubation

1 pneumothorax requiring needle decompression but not a chest tube.

1 Accidental extubation during bougie removal.

Postoperative Intensive Care: a total of 4 patients required to be observed in intensive care postoperatively: one patient had new onset supraventricular tachycardia that responded to adenosine, one had worsening metabolic acidosis and arrhythmia during surgery, one patient had concurrent epiglottoplasty and developed stridor postoperatively and one patient was transferred to Intensive care on postoperative day one for increased work of breathing and desaturation most probably related to atelectasis and narcotic usage..

Discussion: In our institution, the incidence of perioperative complications associated with robot-assisted laparoscopic procedure was low. There was no anesthetic- related mortality reported.

Bibliography

1. Mariano ER et al, Anesth Analg. 2004 Dec;99(6):1665-7.

2. Parr KG, et al, J Clin. Anesth. 2002 May;14(3):228-38