



Learning Curve Analysis of Laparoscopic TAPP Hernia Repair

Stabilization and Time Optimization

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Introduction

This study evaluated the learning curve for laparoscopic transabdominal preperitoneal (TAPP) repair of inguinal hernia and determined the number of procedures required to achieve operative stabilization and time reduction.

Methods

A retrospective analysis of TAPP procedures at the General Surgery Institute from September 2021 to December 2024 was conducted. The procedure, introduced in late 2021, included 252 elective, unilateral TAPP repairs performed by three surgeons. Emergency cases and bilateral repairs were excluded. Operative time stabilization was defined as inter-segment variability of less than 5 minutes, analyzed in groups of 10 consecutive cases per operator.

Results

The median operative time was 70 minutes, with stabilization achieved after 23 operations on average. Operator-specific stabilization occurred after 20 operations for Operator A and Operator B and after 30 operations for Operator C. Significant time reduction was observed after 60 operations for Operator A and Operator C and after 50 operations for Operator B. Variability in operative times decreased consistently over the learning curve.

Parameter	Team	Surgeon A	Surgeon B	Surgeon C
Number of procedures	252	52	84	116
Operative time - median (min)	70.0	75.0	90.5	53.5
Operative time - mean (min)	73.4	74.5	96.6	56.1
Operative time - range (min)	23-165	35-141	61-165	23-113
Stabilization after (no. of procedures)	23	20	20	30
Significant time reduction after (no. of procedures)	57	60	50	60
Standard deviation (min)	26.8	21.3	22.5	17.5

Conclusions

Stabilization of TAPP hernia repair outcomes is achieved after approximately 23 cases, while significant time reduction requires around 57 cases per operator. These results highlight the importance of structured training and practice in mastering new surgical techniques.