

# The Superiority of Laparoscopic Appendectomy: Myth or Reality?

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**Background:** Laparoscopic appendectomy is a laparoscopic intervention that could be achieved with the improvement of laparoscopic instruments and technology. It presented an upward trend in recent years despite the many controversies surrounding this type of intervention. In our clinic was a "bridge route" to acquire advanced laparoscopic surgical techniques.

**Methods:** Comparative analysis of laparoscopic appendectomy and classic appendectomy; establishing the superiority of laparoscopic approach. We have studied the casuistry of the Surgery Clinic I of the County Emergency Clinical Hospital Tîrgu Mureș for the 2008–2011 period (3 and half years). Several parameters were analyzed.

**Results:** In the analyzed period 209 appendectomies were performed: 98 (53%) by laparoscopic approach and 111 (47%) by open approach. 49.13% of all women operated received laparoscopic surgery, while only 44.08% of men have had this approach. The time of laparoscopic surgery was on average 13.10 minutes longer than the classic. Conversions were 10% of total laparoscopic interventions. Complications that required reintervention were recorded in 1 case (20%) after the laparoscopic approach, as opposed to 4 cases (80%) for the classic approach.

**Conclusions:** Laparoscopic appendectomy weight increased progressively from year to year. The average duration of laparoscopic appendectomy learning curve was part of any specific type of laparoscopic intervention. The benefits of this type of intervention are clear, as represented by the possibility of exploring the peritoneal cavity and differential diagnosis of "painful right iliac fossa syndrome" in women, can guide classic approach in case of conversion, rapid mobilization and early resumption of transit, decreased parietal pain, a lower rate of parietal infection, short-term hospitalization and faster reintegration in activity.

**Keywords:** laparoscopic, appendectomy, surgery

## Introduction

In 1889 Mc Burney carried out the first open appendectomy which remained the "gold standard" for the surgical treatment of appendicitis for over 100 years until 1983, when Kurt Semm, a German gynecologist practiced the first laparoscopic appendectomy. Even after 25 years, many authors try to establish its superiority and benefits compared to the classical method, and it remains a highly controversial subject in surgery.

In this paper we proposed to evaluate the effectiveness of laparoscopic appendectomy (LA), a modern, highly efficient method of surgical treatment with a major impact on postoperative evolution and on the cost-benefit ratio, versus the traditional open appendectomy (OA).

## Methods

This study is based on a retrospective study, including a number of 209 patients diagnosed with appendicitis and operated in Surgical Clinic I of the County Emergency Clinical Hospital Tîrgu Mureș between 2008–2011. Cases included in the study were divided into two groups: a first group with 98 patients who underwent LA and second group of 111 patients who had OA.

Tracked data were obtained from case report forms (FO) and consisted of age and sex of patients, conditions of admission (emergency or programming), anatomopathological diagnosis, length of surgery time (minutes), duration of hospitalization, postoperative complications and mortality.

## Results

In the LA group that included 98 patients, the age of patients was between 15 and 68 years, with a mean of 33.93 years, while in OA group comprising 111 patients the age was between 15 and 87 years, with an average of 39.25 years. Distribution of patients by age in the two groups is shown in Figures 1 and 2.

Of the 209 cases, 103 were male and 124 female. The gender distributions for the types of interventions are presented in Table I.

Of the 137 patients admitted in emergency, 61 (44.53%) were operated laparoscopically and 76 (55.47%) open, while of the total of 72 scheduled patients, 37 (51.39%) were operated laparoscopic and 35 (48.61%) open.

The anatomopathological examination found: 75 cases of catarrhal appendicitis (36 LA, 39 OA), 45 cases of phlegmonous appendicitis (19 LA, 26 OA), 26 cases of gangrenous appendicitis (9 LA, 17 OA), 11 cases of appendicular abscesses (4 LA, 7 OA) 14 cases of complicated appendicitis with peritonitis (8LA, 6 OA), 8 cases of appendicular blocks (5 LA, 3 OA), 27 cases of chronic appen-

Table I. Distribution of patients by gender

Gender	Number of patients (%)		
	LA	OA	Total
Male	41 (42%)	52 (47%)	93
Female	57 (58%)	59 (53%)	116
Total	98	111	209

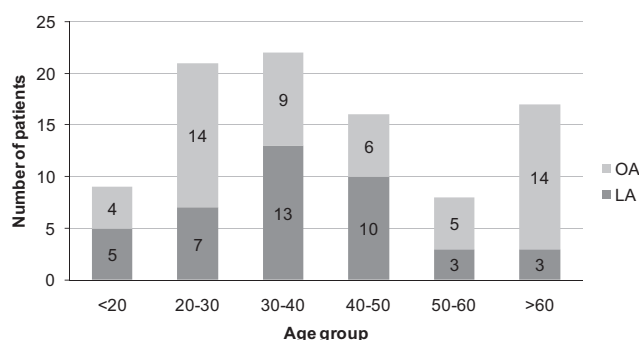


Fig. 1. Distribution of women by age in the LA and OA groups

ditis (16LA, 11 OA), a reactive appendicitis (OA) and 2 herniar appendicitis (OA).

In the LA group 11 patients were obese, similar to the OA group with 12 obese patients.

Regarding the length of surgery time, the shortest LA was 30 min and the longest 120 min, with an average of 67.36 min, similar to OA: the shortest was 20 min and the longest 120 min with an average of 54.26 minutes (Figure 3).

The number of days of hospitalization in the LA group was between 2 and 20 days with an average of 3.95 days and in the OA group between 2 and 20 days, with an average of 5 days.

Conversions were performed in a total of 11 cases (11.20%).

Complications were reported only in 5 cases, and as expected they were more common in the OA group (4 cases), being present only in one case at the lot LA.

There were 5 reinterventions: 1 in the LA group and 4 in the OA group.

Mortality was zero in both groups.

## Discussion

Based on the results we can say that in our study, OA was performed in a larger number of cases – 53% to 47% in LA, due to two factors: the surgeon option and patient consent.

The number of LA was low in emergency cases, probably due to the fact that surgeons prefer OA in emergency and leave LA to scheduled patients.

Laparoscopic technique was practiced more frequently in women (58%), being particularly preferred for diagnos-

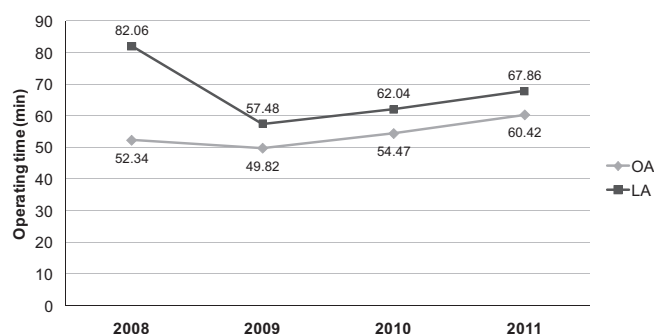


Fig. 3. Evolution of average operating time for the two types of surgery: LA and OA.

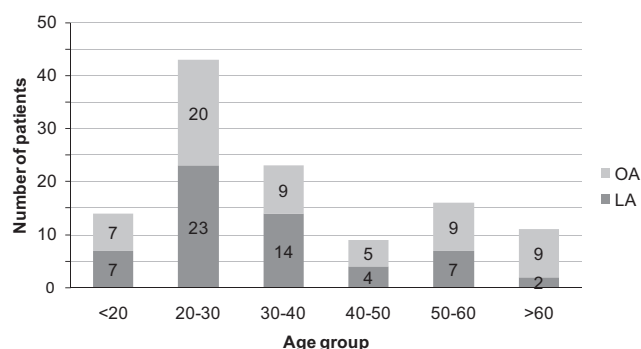


Fig. 2. Distribution of men by age in the LA and OA groups

tic uncertainties such as "painful syndrome of right iliac fosse" (giving the possibility to explore the entire peritoneal cavity), as described by Gaitan [1], Vettoreto [2].

There were no significant differences between the two groups regarding mean age (only 5.12 years more for OA). The age group between 30–40 years prevails laparoscopic interventions for both sexes. Also, for both sexes over 60 years, open interventions prevail, contrary to the data in the literature [2].

LA was preferred to OA in cases of chronic appendicitis (7.66% LA / 5.26% OA) and complicated forms with peritonitis (3.83% LA / 2.87% OA) and apendicular block (LA 2.39% / OA 1.44%) allowing a more efficient washing and drainage of the entire peritoneal cavity and reducing the suppurative complications of the abdominal wall [3].

In obese patients, the two types of interventions were almost equal in frequency, similar to data from the literature [4].

The average duration of intervention shortens over time with the increasing experience of surgeons, initially being longer due to a specific learning period [5], which is significant considering the financial aspect [6,7].

The average duration of hospitalization is shorter after LA, which means lower costs and a faster recovery and reintegration of the patient, which is important for some professions, similar results were reported in the literature [6].

Conversions were 10% of interventions, more than what data from the literature suggest: 2.2% (Bruger) 6.2%

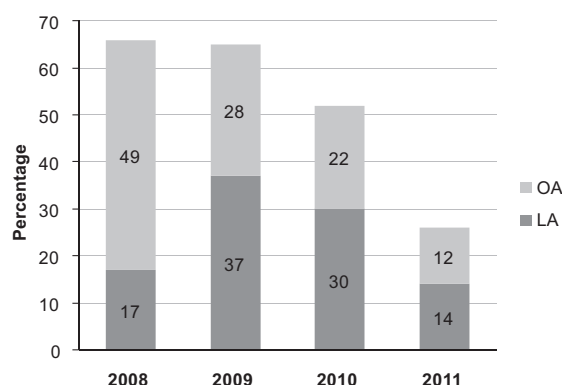


Fig. 4. The evolution of the cases operated by the two types of intervention over the 4 years of study

(Schick), probably due to difficult cases and a lack of experience at that time in laparoscopic "advanced" surgery.

Complications were recorded at a rate of 1.02% in the LA group, much lower than in the OA group (3.6%), all of them being suppurative complications, similar to Shirazi [8]. We had not other postoperative complications (hematoma, urinary retention, paralytic ileus or fistula wall) mentioned by other authors [6,7] except for a slight disuria, not requiring any treatment after urinary probes used per-operatory in all patients with LA. Other authors as Asarias [9], Liu [10], Swang [11] did not find significant differences between the two groups regarding complications.

Reinterventions after laparoscopic technique are significantly lower (1.02%) compared with the classical technique (3.6%). They are lower in our study compared with data from the literature: 2–4% (Schick).

Postoperative mortality in the literature was 0.1% (Shick) while in our study it was not recorded.

## Conclusions

Based on the related facts, our study has shown that the importance of LA increased in our clinic progressively from year to year, proving its superiority and being certainly more effective.

Laparoscopic intervention in appendicitis is a safe procedure, it is less traumatic to the patient, giving a greater postoperative comfort, faster recovery and social reintegration.

Laparoscopic appendectomy deserves a higher place between minimally invasive interventions, especially in obese patients, athletes, young women.

Although in our study the LA surgery time is longer than the OA surgery time, laparoscopic appendectomy can be considered as a procedure of "initiation" in advanced laparoscopic surgery, being a "bridge" to diversify the range of laparoscopic interventions.

Regardless of statistics, the choice of procedure performed depends on the doctor or patient options, and certainly the future will prove the superiority of "minilaparoscopy" by certain results mainly from an aesthetic point of view.

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