RESULTS ON NEGATIVE APPENDECTOMY: A DECADE STUDY

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BACKGROUND

The aim of this study was to evaluate the clinical outcomes associated with negative appendectomies (NA) comparing with all the appendectomies performed in a same period of time in a General Surgery Service.

METHODS

A retrospective study on a prospectively maintained medical record-based database of 2059 consecutive appendectomies –among them 68 negatives- performed between 2007 and 2016. Gender, age, surgical approach and postoperative complications were analysed and classified according to the Clavien-Dindo scale.

RESULTS

Between February 2007 to December 2017, 2464 appendectomies were performed in the Hospital del Mar. Of these, 84 NA were performed, representing 3.4% of the total. In the total appendectomies group, both procedures were similar (1109 laparoscopic (45%) vs. 1287 open (52%) however in the NA group, laparoscopy has keep far more used than open procedure, 70% vs. 30% open, difference which was significative (p<0.01), probably as most of them were explorative laparoscopies. Figure 1. The mean age was 32 ± 3.4 years, predominantly females, 55 cases (65%) vs. 29 (35%). Women were more represented in the NA performed by laparoscopy, 42 out of 84 cases, accounting for 72% of all the NA, thus, being more prone to get a negative surgical result (p<0.01). The hospital stay was similar between the laparoscopic and open approaches, with a mean of 5 days ± 0.55, men having an average stay of more than 7 days compared to 4 in women. Table 1.

Analysing the incidence of NA, in 2011 there were more NA performed (12 out of 237 total procedures, 5%) and after this year a consistent decrease was observed, 2% in 2015, with a late elevation in 2017. Figure 2 and 3. These results correlate with the decrease tendency in the use of radiologic diagnostic methods.

21 patients presented complications (31%), with no significant difference between the open and laparoscopic procedures (30% vs. 31%, p = 1). Laparoscopy has a greater number of minor Clavien I and II complications (67% vs. 40%, P = 0.34). Clavien III complications predominate in the open approach surgery (17%). Table 2.

Around one fifth of all the appendectomies the surgeon did not found any pathological sign, being this result more frequent in women (26% vs. 17%, p = 0.52). In men's group there was a mismatch between the surgical and the anatomopathological diagnosis in 6 out of 18 cases (33%). In woman's group, this happened in 10 of out 42 cases (22%). The most frequent intraoperative findings in men were adhesion and dilatation of the small bowel (17%) and in women uterine, ovarian and tubal hyperaemia (17%). Table 3.

Table 1. NA demographics and clinical outcomes

	Laparoscopy	Open
Total NA	59 (70%)*	25 (30%)
Women 65%		
Man 35%		
Female	42 (72%)*	14 (30%)
Conversion to open	5 (10%)	
Median length of stay	5	4
Surgical time	65	61
Radiologic explorations		
None	8 (16%)	2 (11%)
Ultrasound	27 (54%)	11 (61%)
CT scan	5 (10%)	2 (11%)
Both	8 (16%)	3 (17%)

*p<0,05

Table 2. Complications by surgical approach

Clavien- Dindo scale	Laparoscopy	Open
I	5 (10%)	2 (11%)
II	5 (10%)	0
IIIa	4 (8%)	3 (17%)
IIIb	1 (2%)	0
IVa	0	0
IVb	0	0
V	0	0
Total	15 (30%)	5 (28%)
Surgical site infection	6 (12%)	1 (5,6%)
	4 wound infection	
	1 intra-abdomina abscess	
	1 renal abscess	
Readmission	0	0
Reoperation	2 (4%)	0

Table 3. Most common intraoperative findings

Women		Men	
Total normal appendix	42	Total normal appendix	18
Free liquid	7 (17%)	Bowel adherences	3 (17%)
Ginecological findings	15 (35%)	Small bowel dilatation	3 (17%)
Adenopathies	3 (7%)	Ileitis	2 (11%)
Bowel adherences	3 (7%)	Pyloric ulcer	2 (11%)
Appendangitis	1 (2%)	Hernia	1 (6%)
Ileitis	1 (2%)	Diverticulitis	1 (6%)
Epiploic appendix torsion	1 (2%)	Appendangitis	1 (6%)
		Meckel	1 (6%)
		Cecal node	1 (6%)
No findings	11 (26%)	No findings	3 (17%)
Anatomopathologic dischordance	10	Anatomopathologic dischordance	6

Figure 1. Laparoscopic vs. open approach in NA appendectomies performed between 2007 and 2017.

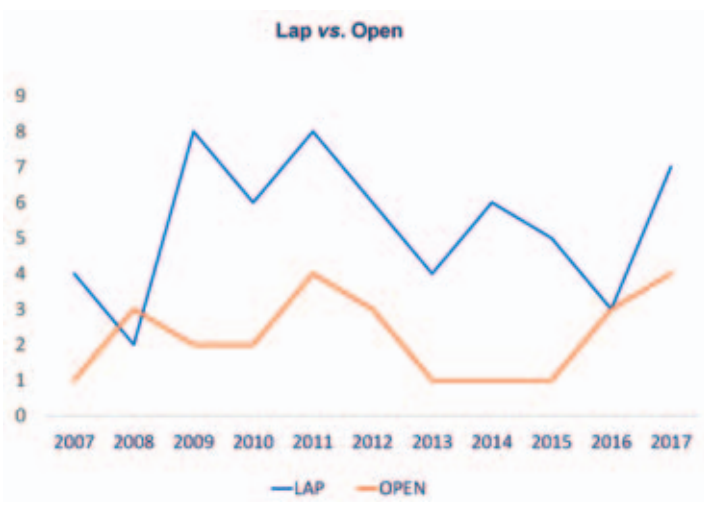


Figure 2. NA appendectomies vs the total number of appendectomies performed between 2007 and 2017.

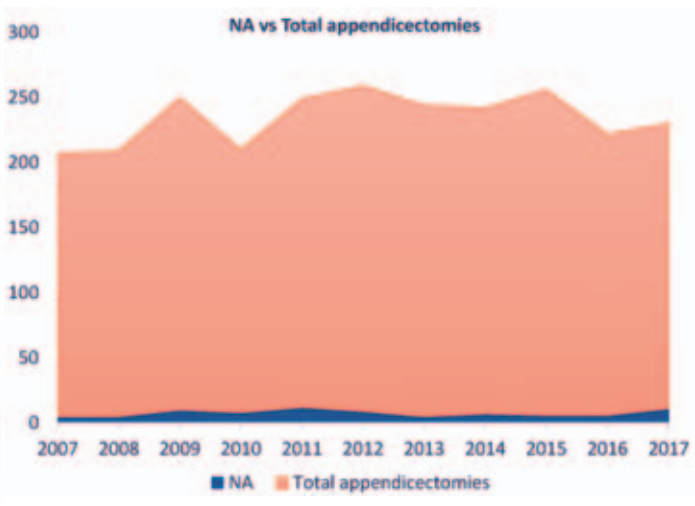
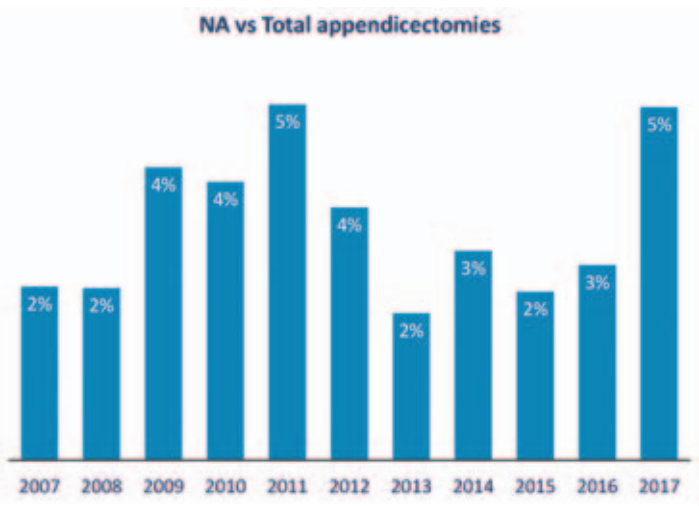


Figure 3. NA appendectomies performed between 2007 and 2017.



CONCLUSIONS

NA rates showed a progressive decrease in the last 6 years. The laparoscopic approach was more frequently used in NA appendectomies and women were more representative in this group also. No differences in terms of complications were observed between both surgical approaches probably related with the sample size. Further investigations are needed to understand the inner differences in order to improve acute appendicitis diagnose.

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