

PELVIC INFLAMMATORY DISEASE AND SURGICAL TREATMENT OVER A TEN YEARS PERIOD; SINGLE INSTITUTION EXPERIENCE

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ABSTRACT

Background: In our study, we examined the frequency of surgical procedures due to the acute presentation of the pelvic inflammatory disease (PID) in regard to all gynecological procedures in a single institution. We also wanted to present patients' age range and type of surgical approach as well as surgical extension.

Materials and methods: This retrospective study investigated a total of 10,175 surgical procedures, out of which 103 were due to acute PID. The study included 101 patients. We obtained data from surgical procedures performed from September 2009 to September 2019.

Results: In the observed ten years period, the frequency of surgical procedures due to the acute PID was 1.01%. It was found that women were mostly older than 25 (85.15%). Laparoscopy was performed in 52.43% of cases and laparotomy in 37.86% of cases. Laparotomy incisions were transverse in 26.67% of cases and vertical in 42.22% of cases. The most radical procedures were performed in 17.48% of cases in which patients underwent a subtotal or total hysterectomy with unilateral or bilateral adnexectomy.

Conclusion: In conclusion, although rare, surgical procedures in PID are relevant because they are, according to our data, more common in patients older than 25, and surgical procedures tend to be more extensive.

Keywords:

pelvic inflammatory disease, surgical treatment, surgical approach

INTRODUCTION

Pelvic inflammatory disease pertains to an acute infection of the upper genital tract structures in women, affecting any or all of the following: uterus, fallopian tubes, ovaries and even adjacent pelvic structures. It is mostly caused by untreated sexually transmitted diseases which ascend from the lower genital tract. According to the literature available, it is typically found in sexually active women younger than 25 who do not use contraception and have multiple sex partners,

whereas it rarely occurs in older women [1–3].

The term PID implicates a broad spectrum of clinical presentations, although in many women it can be asymptomatic as well. Consequently, it is difficult to diagnose, which is why the Center for disease Control and Prevention (CDC) has defined a minimum and additional criteria to help in making a more accurate diagnosis. The treatment is based on antibiotic therapy, however in some cases surgical intervention is required [3].

The actual worldwide incidence and prevalence of PID are difficult to determine due to the typically unclear clinical presentation and the lack of objective diagnostic criteria [4]. In this study, we wanted to show the frequency of surgical procedures due to the acute presentation of pelvic inflammatory disease in regard to all gynecological procedures, as well as patients' age range, type of surgical approach and surgical extension at a single institution.

MATERIALS AND METHODS

The data for this descriptive study were collected from gynecological surgical records of women treated between September 1, 2009, and September 1, 2019, at the Department of Obstetrics and Gynecology in Clinical Hospital "Sveti Duh", Croatia. In this study, we investigated a total of 10,175 surgical procedures, out of which 103 were due to acute PID. To point out, the number of patients included in this study was 101, given that one patient underwent two reoperations in one year. The data provided information on age, preoperative diagnoses, surgical approach and type of surgical incision. The collected data were imported and analyzed retrospectively in the computer software Microsoft Excel 2013.

RESULTS

In the observed ten year period in 10,175 cases there were 103 surgical procedures due to acute PID, which is 1.01% out of all surgical procedures in the Clinic. The highest percentage was in 2013, 10 surgical procedures out of 699 cases (1.43%), whereas the lowest was

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in 2009, 1 surgical procedure at 371 cases (0.27%). However, it needs to be addressed that the data from 2009 were limited to the period between September 1 and December 31. The yearly frequency of surgical procedures is presented in the Table 1.

While analyzing the age of the 101 patients it was evident that a majority of 86 patients were older than 25 (85.15%), whereas only 15 of them (14.85%) were younger than 25. The oldest patient was 63 and the youngest 18 years old. This is shown in Figure 1.

In regard to the type of surgical approach used in the treatment of PID, in 54 (52.43%) laparoscopy was performed, while 39 (37.86%) had the laparotomy. Furthermore, laparoscopic procedures were converted to laparotomy in 6 (5.83%) patients. Culdocentesis was performed in 4 (3.88%) patients.

Considering all laparotomy cases, including those where conversion was performed, we compared types of surgical incision. A total of 45 procedures were analyzed and we noticed vertical incision in 42.22% of cases, whereas 26.67% of cases had Pfannenstiel incision. There was also one case where the Pfannenstiel incision was converted to a vertical incision. Owing to the limitations of used database, in one-third of the observed cases the type of surgical incision that was used remained unknown.

The cases also have differences as regards the range of infection and affected structures. Analyzing a total of 103 cases, a right-sided infection occurred in 25.24% of cases and a left-sided infection occurred in 14.56% of cases. However, the infection was mostly bilateral, in 47.57% of cases. The affected side remained unknown in 12.62% of cases. We also noticed that appendectomy was performed in 21.36% of cases. Finally, more radical procedures were performed in 17.48% of cases in which patients underwent a subtotal or total hysterectomy with unilateral or bilateral adnexectomy. In our analysis, we included one case of total hysterectomy with unilateral ovariectomy without salpingectomy. All patients were older than the age of 40, except one (29 years old) who underwent three surgical procedures due to complications. Furthermore, in 11 out of 18 cases additional genital tract pathology, e.g. ovarian cyst, myoma or tumor, was present.

DISCUSSION

Approximately one-third of patients with a moderate or severe clinical presentation of PID responds poorly to antibiotic therapy and need to undergo a surgical procedure [5]. However, there is no specific international data available for PID incidence and prevalence worldwide, which is why it is hard to determine the real percentage of surgically treated patients [4]. In this study, we wanted to show the frequency of surgically

treated PID patients in regard to all gynecological surgical procedures in our Department, which turned out to be relatively constant in a ten years period (Table 1).

Analyzing patients' age range, our results showed that surgically treated women with PID were mostly over 25 years of age. These results may seem surprising considering that PID typically occurs in women younger than 25 and rarely in older women [1,2]. However, this study includes only surgically treated patients' age and cannot be reflected in all PID patients. This result may be explained by the fact that in older, especially postmenopausal women, the clinical presentation is usually severe, with the more common formation of tuboovarian abscesses or additional intraabdominal pathology, which can all require surgery [6].

Laparoscopy was performed in slightly over half of cases, which is not surprising considering its advantages compared to laparotomy, such as less invasiveness, smaller incisions and shorter operation duration with less postoperative pain [5]. However, despite its many advantages, in more severe cases laparoscopy is not fully adequate. In those cases, patients need to undergo open abdominal surgery, which explains the relatively high percentage of laparotomy cases reported in this research (37.86%) [7]. Sometimes, intraoperative conversion of surgical procedures is needed due to complications or extensive adhesions [8]. In our study it was performed in 6% of cases. In 4% of cases transvaginal drainage from the pouch of Douglas, or by its other name, culdocentesis, was performed [7].

Laparotomy, or open abdominal surgery starts with an incision of abdominal wall [7]. In this study, we observed different types of incision and noticed that in about 42% of cases a midline laparotomy with a vertical incision was performed. The incision can extend from the xiphoid to the pubic symphysis. On the other hand, in 27% of cases, a transversal or Pfannenstiel incision was performed, which is placed in the curving interspinous skin crease [9]. However, in one-third of cases, this information remains unknown, which is why the real percentage of different types of incision is hard to determine.

As results showed, in almost half of cases infection was bilateral, which coincides with a fact that surgical treatment is reserved for severe cases. In around 20% of cases, the appendix was removed, with or without removal of genital tract structures. However, there was no information on whether the appendix was removed due to infection or unaffected as a measure of prevention [7].

Finally, in almost 18% of cases, the most radical surgical procedures included the partial or total removal of the uterus and adnexa. Almost every patient was older than 40 and most of them had an additional genital tract pathology. This result can be compared to a study

wherein 28.6% of surgically treated patients underwent a hysterectomy, out of which 95% were older than 40 and 57% had comorbidities [5]. Although the exact indications for such radical procedures remain unknown owing to the limitations of the used database, we can assume its relation to the fact that desire for future fertility is considered while making a decision about undergoing extensive surgical treatment [7].

CONCLUSION

Assuming that the incidence of sexually transmitted diseases is increasing, while bacteria are becoming resistant to a large number of antibiotics, we can expect that surgically treated PID will become more common. Indications for surgical procedures are becoming more important to recognize as, according to our data, patients treated surgically are older than 25 and procedures tend to be more extensive.

CONFLICT OF INTEREST:

The authors declare that there is no conflict of interest.

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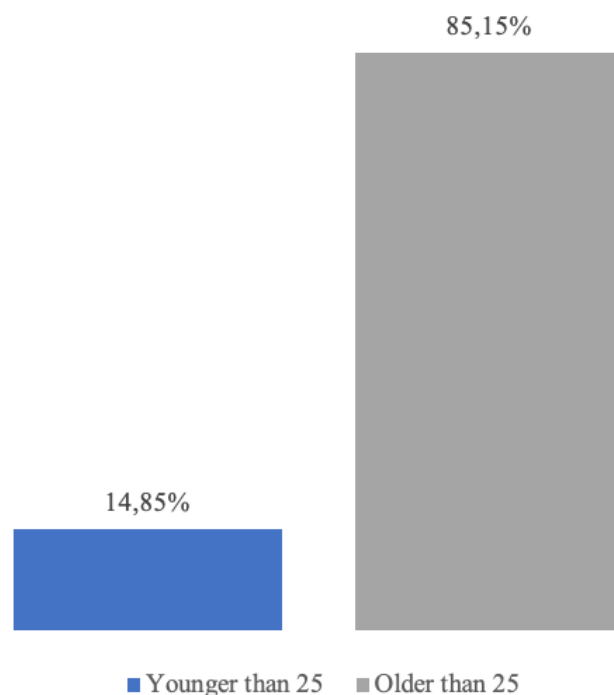


Figure 1. Graphical representation of patients' age

| Year | All surgical procedures | PID surgical procedures | Percentage (%) |
|--------------|-------------------------|-------------------------|----------------|
| 2009* | 371 | 1 | 0,27 |
| 2010 | 932 | 11 | 1,18 |
| 2011 | 1006 | 11 | 1,09 |
| 2012 | 957 | 8 | 0,84 |
| 2013 | 699 | 10 | 1,43 |
| 2014 | 926 | 11 | 1,19 |
| 2015 | 1012 | 13 | 1,28 |
| 2016 | 1084 | 9 | 0,83 |
| 2017 | 1089 | 7 | 0,64 |
| 2018 | 1184 | 10 | 0,84 |
| 2019** | 915 | 12 | 1,31 |
| Total | 10175 | 103 | 1,01 |

*September 1 - December 31

**January 1 - September 1

Table 1. Frequency of surgical procedures in a ten years period