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Benefits of second-look laparoscopy in the management of pelvic inflammatory disease

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INTRODUCTION

Pelvic inflammatory disease (PID) involves deep and severe visceral infections due to bacteria from the endometrium attaining the fallopian tubes following sexually transmitted infection (STI), an endo-uterine maneuver or due to neighboring infection. (1). In France, 200,000 new cases of PID are recorded per year, with 55% of patients aged under 25. These young women are of childbearing age and have a high risk of complications such as chronic pelvic pain, recurrence, ectopic pregnancy and infertility sequelae (2). Success of PID treatment may not lead to anatomical ad-integrum restitution, and only intra-uterine pregnancy being the best indicator of complete healing.

Treatment involves antibiotics at the acute phase and surgical management may be necessary when imaging reveal tubo-ovarian abscess, in cases of poor clinical tolerance, resistance to medical treatment or unconfirmed diagnosis as specified in French (3,4), European (5) and American (6) recommendations. Surgical management in the acute phase is drainage of the abcess and should be done by laparoscopy or by puncture under vaginal guidance. Using surgical classification, initial management by laparoscopy, makes it possible to determine 3 stages of salpingitis (7) At stage 1 (catarrhal) tubes reveal congestion and hyperemia, stage 2 (parenchymatous) is characterised by increased inflammation levels, and stage 3 (severe salpingitis) by the presence a tubo-ovarian abscess. Second-look laparoscopy (SLL) are only reserved for cases of infertility or chronic pelvic pain.

These recommendations favoring medical treatment are based on conclusions from the PEACH study (8,9) which reported that following medical treatment only, 57% of patients conceived and 42% delivered. These encouraging results brought about changes in practice and notably a considerably reduced use of first surgery and of SLL, even though the study

27 only included patients with moderate PID and excluded "tubo-ovarian abscess and surgical
28 abdomens". Furthermore the study reported unacceptably high results for infertility (19%) and
29 subsequent pelvic pain (42%) for patients treated for moderate levels of PID. A comparison
30 of these results with those obtained from systematic surgical management and particularly for
31 acute cases, remains to be carried out. Lastly, no further treatment was proposed to allow
32 evaluation of fertility or reduce risk of complications.

33

34 Previously both Bouedec et al (10) and Raiga et al (11) had presented results in
35 favor SLL for assessment and restoring of patient fertility. Notably the possibility of obtaining
36 a prognosis concerning fertility, based on the Mage score (grade 1 to 4) obtained from tubal
37 evaluation (12) and an adhesion score using the American Fertility Society classification
38 (AFS) (13). These scores are described in table 1. This present study aims to evaluate the
39 results and benefits of SLL in cases of PID and to evaluate risk factors that lead to severe
40 complications concerning fertility and which indicate the need for SLL.

41

42 **Materials and Methods**

43 This unicentric retrospective study was carried out at Clermont-Ferrand University
44 Hospital Center over a 5-year period from January 1, 2010 to December 31, 2014. Inclusion
45 criteria concerned all patients who had undergone SLL due to PID initially treated either
46 medically or surgically. A total of 188 patients had received treatment for PID and benefited
47 from a hospital stay (outpatients were not included). Of these, 96 were excluded because
48 they didn't have SLL (age > 43 years, associated endometriosis, immediate management for
49 assisted reproductive techniques (ART) and patient refusal) and 16 had SLL but incomplete
50 data (missing data or more than 10 years between initial PID and SLL). A total of 76 patients
51 were finally included as described in the Flow chart (table 2).

52

53 Extensive data collection was carried out to include patient characteristics, clinical
54 and para-clinical characteristics of salpingitis, initial medical and surgical management data,
55 indications and SLL details, and information concerning long-term follow-up notably patient
56 fertility. Two scores relating to fertility were obtained for each surgical intervention: the
57 Mage score (grade 1 to 4) for tubal assessment and the AFS classification concerning
58 adhesions (score 0 to 3). AFS scores 0 and 1 were included in the analyses and so provided
59 increased statistical power.

60

61 Statistical analysis was performed using Stata software (version 13, StataCorp,
62 College Station, Texas, USA). All tests were two-sided, with a Type I error set at 0.05.
63 Categorical parameters were expressed as frequencies and associated percentages, and
64 continuous data as mean \pm standard deviation or as median [interquartile range], according to
65 statistical distribution. Categorical variables were compared between independent groups
66 (PID stage 1 or 2 vs. PID stage 3, and medical vs. surgical initial management) using the chi-
67 square test or the Fisher exact test. Quantitative data were compared between groups with the
68 Student t test or with the Mann-Whitney test, as appropriate. The Gaussian distribution was
69 verified by the Shapiro-Wilk test and homoscedasticity by the Fisher-Snedecor test.
70 Furthermore, a multivariable ordinal logistic regression was used to predict AFS stage, using
71 covariates according to univariate results and clinical relevance: age, tubal surgery and PID
72 stage (1 or 2 vs. 3). Because of the small sample (n=57), few variables were included in the
73 model. The results were expressed as odds ratio (OR) and 95% confidence interval.

74

75 **RESULTS**

76 Our study included 76 patients who underwent SLL post-PID, with an average of 15
77 per years. General patient characteristics and details of the initial infection episode are
78 summarized in Table 3. When chlamydiae trachomatis has been requested IgG serology was
79 positive in 72,9%, and PCR in 39,5% . Other germs were streptococcus, E coli, Neisseiria
80 gonorrhoeae and staphylococcus aureus. Antibiotic therapy was administered in 100% of
81 cases. Before the french recommandation differents bi ou tri-antibiothérapie were used
82 (amoxicillin and clavulanic acid, levofloxacin, metronidazol and/or ofloxacin). Since 2012
83 association of Metronidazol and ofloxacin were the reference. Initial surgical management
84 was performed in 57 (75%) patients, the indications were the presence of an abscess
85 confirmed by imaging, uncertain diagnosis and unfavorable clinical evolution in (26.3%).
86 During initial surgery, 57.9% of patients were found to have stage 3 salpingitis. Procedure
87 during initial surgery was adhesiolysis in 93%, salpingectomy in 5.3%, abcess drainage
88 including salpingotomy in 43.9%. Dye tests werent't performed during initial surgery.

89
90 Indication of the SLL were pelvic pain (21.1%), hydrosalpinx (18.4%) and others
91 were offered routinely (60.5%). During SLL, 78.9% of patients underwent adhesiolysis and
92 42.1% tube-related treatment. (19,7% of salpingectomy and 22,4% of neostomy or
93 fimbrioplasty. The median time between initial surgery and SLL was 3.5 months [3; 5]. An
94 adhesion score was recorded for all patients and the Mage score obtained for 72 patients. 63
95 patients received long-term follow-up and were contacted by phone, of whom 30 patients
96 (34%) expressed a desire to conceive. We had 23 pregnancies and outcomes were as follows:
97 16 live births (69.6%), 2 ectopic pregnancy (8.7%), 2 early miscarriage (8.7%) and 3
98 abortions (13%). Only 5 patients benefited from ART, and two pregnancies were due to IVF.
99 The infertility rate was 23.3%.

100

101

102 Subgroup analyses allowed comparison of SLL characteristics in relation to the PID
103 stage (Table 4) Due to low patient numbers, those with an initial salpingitis stage of 1 and 2
104 were combined to form a single group of 24 patients, compared to 33 stage 3 patients. At the
105 initial laparoscopy, results revealed 72.7% of severe adhesions at stage 3 as compared to 25%
106 for stages 1 and 2 ($p = 0.001$). During SLL, more patients in this group received a high
107 adhesions score and a Mage score of 4 (27.3% vs 0%, $p = 0.001$). Multivariate analysis
108 revealed that stage 3 patients are 8.2 times more likely to have higher adhesion levels than
109 stage 1 or 2 patients (OR [95% CI] = 8.2 [2.2; 30.5], $p = 0.02$).

110

111 Finally, analysis of the relationship between fertility and Mage and adherence scores
112 at SLL was performed by comparing patients who conceived after surgery with those who did
113 not. A total of 30 patients with a childbearing project were selected and included 23 who
114 conceived. Results obtained during SLL allowed the authors to establish a relationship
115 between the pregnancies obtained, their characteristics and fertility scores. Mage scores of 1
116 or 2 were found to be associated with a higher pregnancy and birth rate), although this result
117 was not significant. Mage score of 4 was significantly associated with a higher ectopic
118 pregnancy rate. These results are shown in Table 5.

119

120 **DISCUSSION**

121 The Kreisel study conducted in the US found a 4.4% prevalence of PID in sexually
122 active women, this report highlight the magnitude of this public health issue which impacts
123 young women of childbearing age (14). As explained in the introduction, since 2012 as a
124 result of the PEACH study (9), guidelines no longer recommend systematic surgical
125 management, and medical treatment by antibiotics is the first-line therapy (3-6). But, the

126 conclusions were uniquely based on cases of moderate PID for which complication rates were
127 still high i.e. 19% infertility and 42% chronic pelvic pain. At least, first line antibiotherapy
128 have never shown their efficacy on fertility after PID especially in severe forms (10).

129 Studies investigating initial surgical management in PID, include the Chayachinda
130 cohort conducted from 2004 to 2011, which reported a low surgical rate of 12.8% for patients
131 with tubo-ovarian abscess (TOA) (15). Kontoravdis et al, reported a 22.8% rate of surgery for
132 patients with acute pain linked to salpingitis (16). In our study a higher rate of patients
133 underwent primary laparoscopy (75%), of whom more than half had TOA, our results shows
134 that we probably made too much initial surgery, but the evaluation of the SLL, confirmed that
135 severe PID are more at risk of potential complications like adhesions and tubal infertility and
136 ectopic pregnancies. This is confirmed by the recent French recommendation which support
137 the drainage of tubo-ovarian abscess. This drainage should be realized by vaginal puncture
138 under ultrasound guidance or by laparoscopy, as quickly as possible. Our results, in
139 agreement with this guidelines showed that initial surgery shouldn't be systematic except in
140 severe form with TOA (3,4).

141 Up to date, in cases of abscess > 3 cm, present guidelines advocate drainage by
142 transvaginal route, due to the feasibility and reproducibility of this technique. Granberg et al,
143 in a review of the literature reported a success rate in 77 -100% of patients (17) and the
144 French Vermersch study a success rate of 94% (18). Gjelland, reported complete healing from
145 infection in 93.4% of patients (19). In a second study, published in 2012, 52.8% of patients
146 who underwent draining and wished to become pregnant, conceived (20). But patients "who
147 had undergone surgery (after drainage) that made future pregnancy not recommandable" were
148 excluded. Only 38 "good cases" were included and finally only 22 give birth (52%), So if
149 vaginal drainage, is efficient on the treatment of the acute phase of PID, we have very poor

150 data about fertility. Moreover, no study to our knowledge has compared efficacy in terms of
151 clinical efficiency and fertility of vaginal vs laparoscopic drainage, data are still missing.

152 Infertility rates following PID can be high, such as in the USA where rates may vary
153 from 21.3% - 55.6% (9). In our study we found a 37,5% infertility rate, with only 15 out of 24
154 women desiring to conceive, who delivered. Assessment of fertility in post-PID patients is
155 frequently difficult, requiring long-term follow-up for collection of data on pregnancy and
156 acute episode outcomes. SLL therefore provides a key opportunity to collect validated fertility
157 scores, specifically MAGE and AFS adhesion scores as previously described. Accordingly
158 Mage et al (1987) highlighted the relationship between the salpingitis stage, second-look
159 laparoscopy and fertility prognosis, and reported a pregnancy rate that ranged from 58.3% for
160 stage I to 0% for stage IV (12). These results were confirmed by following studies as Le
161 bouedec (1991), Raiga (1996) Gerber et al (1996) who performed control laparoscopies and
162 found high rates of adhesions and tubal occlusion (10,11,21). In a recent retrospective study
163 Chayachinda et al. (2017), used multivariate analysis to show that the presence of a tubo-
164 ovarian abscess is a negative predictor of delivery rate (15). Finally, Audebert et al (2014)
165 reported on a more than 10-year follow-up of 434 patients who underwent neosalpingostomy,
166 and consequently advised performing tubal repair in patients selected on the basis of adhesion
167 stage and tubal score. (22). All these results confirmed the interest of a SLL after TOA, and
168 the treatment of the adhesions or the tubal defects. But it's also highlight that no studies and
169 no data are available about fertility post vaginal drainage of TOA, because all SLL were made
170 following laparoscopic intial treatment.

171 Our study revealed an association between initial infection, secondary adhesions,
172 Mage score and patient fertility. Thus patients with stage 3 PID are 8 times more likely to
173 present with a high level of adhesions than stage 1 or 2 patients (OR [95% CI] = 8.2 [2.2;
174 30.5], p = 0.02). Mage scores of 1 or 2 are associated with higher pregnancy and delivery

175 rates than Mage of 3 or 4 ($p = ns$), and Mage score of 4 are associated with highly ectopic
176 pregnancies ($p = 0.03$). These figures correlate with the severity of the initial infection. SLL
177 should therefore be recommended in women who have presented with tubo-ovarian abscess.
178 Some theories estimates that's more the initial infection is severe, more the initial treatment of
179 the tube and its repair in case of damage is quick, more the benefits on the fertility is
180 important (23,24). We also knows that the infected tubes are also more susceptible to
181 blockage, which if unresolved may lead to hydrosalpinx, a condition resulting in reduced
182 results in IVF as demonstrated by Strandell (25).This provides further evidence in support of
183 carrying out second look laparoscopy in patients wishing to conceive; usually performed by
184 infertility surgeons, experienced in tubal surgery.

185 The main limitation of our study concerns its retrospective nature and corresponding
186 issues linked to data collection and reliability. But, our study is the first since the publishing
187 of CNGOF guidelines, to report on fertility following SLL and thus highlight patient groups
188 susceptible to benefit from this technique. For patients, the outcomes of upmost importance is
189 giving birth to a healthy child. Long-term follow-up data is also necessary for assessment of
190 risk of recurrences and pelvic pain. A prospective randomized study about SLL after tubo-
191 ovarian abcess is actually in progress in our center (ClinicalTrials.gov Identifier:
192 NCT03166982).

193

194 **CONCLUSION**

195 Over recent years there has been a sharp increase in the incidence of PID in women
196 of childbearing age. Recents guidelines about PID endorse the use of dual-antibiotic therapy,
197 reserving first-line surgery for complicated severe cases and second look laparoscopy (SLL)
198 for selected patients with pelvic pain. Our study, revealed an association between PID initial
199 stages, adhesions, tube- related procedures and patient fertility. While SLL was shown to have

200 little impact on the preservation of fertility in cases of mild to moderate PID, our results find
201 an interest of recommending SLL in women desirous pregnancy and who had a tubo-ovarian
202 abscess at the initial stage. Prospective studies should be done to confirm these results.

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205 **References**

206

- 207 1- Mitchell C, Prabhu M. Pelvic inflammatory disease: current concepts in pathogenesis,
208 diagnosis and treatment. *Infect Dis Clin North Am.* 2013 Dec;27(4):793-809.
- 209 2- InVS. Bulletins des reseaux de surveillance des ISTs (internet). 2015. Available from :
210 <http://invs.santepubliquefrance.fr>
- 211 3- Graesslin O. Pelvic inflammatory diseases: guidelines for clinical practice - method
212 and organization. *J Gynecol Obstet Biol Reprod (Paris).* 2012 Dec;41(8):833-4
- 213 4- Brun JL, Graesslin O, Fauconnier A, Verdon R, Agostini A, Bourret et al; Collège
214 National des Gynécologues Obstétriciens Français Updated French guidelines for
215 diagnosis and management of pelvic inflammatory disease. *Int J Gynaecol Obstet.*
216 2016 Aug;134(2):121-5.
- 217 5- Ross J, Judlin P, Jensen J; International Union against sexually transmitted infections.
218 2012 European guideline for the management of pelvic inflammatory disease. *Int J*
219 *STD AIDS.* 2014 Jan;25(1):1-7.
- 220 6- Haulk L. CDC Releases 2015 guidelines on the treatment of sexually transmitted
221 disease. *Am Fam Physician,* 2016 Jan 2015;93(2):144-54.
- 222 7- Mage G et al. *Chirurgie coelioscopique en gynécologie.* Elsevier Masson, 2eme
223 édition 2015;64-71.
- 224 8- Trent M, Bass D, Ness RB, Haggerty C. Recurrent PID, subsequent STI, and
225 reproductive health outcomes: findings from the PID evaluation and clinical health
226 (PEACH) study. *Sex Transm Dis.* 2011 Sep;38(9):879-81.
- 227 9- Ness RB, Soper DE, Holley RL, Peipert J, Randall H, Sweet RL, et al. Effectiveness
228 of inpatient and outpatient treatment strategies for women with pelvic inflammatory
229 disease: results from the Pelvic Inflammatory Disease Evaluation and Clinical Health
230 (PEACH) Randomized Trial. *Am J Obstet Gynecol.* 2002 May;186(5):929-37.
- 231 10- Le Bouëdec G, Pouly JL, Canis M, Wattiez A, Abbas B, Mage G, Bruhat MA Acute
232 salpingitis. Celioscopy before and after treatment: 110 cases]. *J Gynecol Obstet Biol*
233 *Reprod (Paris).* 1991;20(5):680-4.
- 234 11- Raiga J, Canis M, Le Bouëdec G, Glowaczower E, Pouly JL, Mage G, Bruhat MA.
235 Laparoscopic management of adnexal abscesses: consequences for fertility. *Fertil*
236 *Steril.* 1996 Nov;66(5):712-7.
- 237 12- Mage G, Pouly JL, de Jolinière JB, Chabrand S, Riouallon A, Bruhat MA. A
238 preoperative classification to predict the intrauterine and ectopic pregnancy rates after
239 distal tubal microsurgery. *Fertil Steril.* 1986 Nov;46(5):807-10.
- 240 13- The American Fertility Society classifications of adnexal adhesions, distal tubal
241 occlusion, tubal occlusion secondary to tubal ligation, tubal pregnancies, müllerian
242 anomalies and intrauterine adhesions. *Fertil Steril.* 1988 Jun;49(6):944-55.
- 243 14- Kreisel K, Torrone E, Bernstein K, Hong J, Gorwitz R. Prevalence of Pelvic
244 Inflammatory Disease in Sexually Experienced Women of Reproductive Age - United
245 States, 2013-2014. *MMWR Morb Mortal Wkly Rep.* 2017 Jan 27;66(3):80-83.

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- 15- Chayachinda C, Rekhawasin T. Reproductive outcomes of patients being hospitalised with pelvic inflammatory disease. *J Obstet Gynaecol.* 2017 Feb; 37 (2):228-232.
 - 16- Kontoravdis A, Chryssikopoulos A, Hassiakos D, Liapis A, Zourlas PA. The diagnostic value of laparoscopy in 2365 patients with acute and chronic pelvic pain. *Int J Gynaecol Obstet.* 1996 Mar;52(3):243-8.
 - 17- Granberg S, Gjelland K, Ekerhovd E. The management of pelvic abscess. *Best Pract Res Clin Obstet Gynaecol* 2009; 23 (5):667–78.
 - 18- Vermersch C, Dessein R, Lucot JP, Rubod C, Cosson M, Giraudet G. Tubo-ovarian abscesses treatment: Faisability and results of trans-vaginal ultrasound-guided aspiration. *J Gynecol Obstet Biol Reprod* 2016 Mar;45(3):243-8
 - 19- Gjelland K, Ekerhovd E, Granberg S. Transvaginal ultrasound-guided aspiration for treatment of tubo-ovarian abscess: a study of 302 cases. *Am J Obstet Gynecol.* 2005 Oct;193(4):1323-30.
 - 20- Gjelland K, Granberg S, Kiserud T, Wentzel-Larsen T, Ekerhovd E. Pregnancies following ultrasound-guided drainage of tubo-ovarian abscess. *Fertil Steril.* 2012 Jul;98(1):136-40.
 - 21- Gerber B, Krause A. A study of second-look laparoscopy after acute salpingitis. *Arch Gynecol Obstet.* 1996; 258 (4):193-200.
 - 22- Audebert A, Pouly JL, Bonifacie B, Yazbeck C. Laparoscopic surgery for distal tubal occlusions: lessons learned from a historical series of 434 cases. *Fertil Steril.* 2014 Oct;102(4):1203-8.
 - 23- Jacobson L, Weström L. Objectivized diagnosis of acute pelvic inflammatory disease. Diagnostic and prognostic value of routine laparoscopy. *Am J Obstet Gynecol.* 1969 Dec 1;105(7):1088-98.
 - 24- Weström L. Incidence, prevalence, and trends of acute pelvic inflammatory disease and its consequences in industrialized countries. *Am J Obstet Gynecol.* 1980 Dec 1;138(7 Pt 2):880-92.
 - 25- Strandell A. The influence of hydrosalpinx on IVF and embryo transfer. A review. *Human Reprod Update.* 2000 Jul-Aug;6(4):387-95

Table 1 : AFS Adhesion score and MAGE score

Mage Score

Score	0	2	5	10
Permeability		Phimosis	Hydro-salpinx	
Tubal mucosa	Mucosal folds maintained		Folds diminished	No folds ou synechia
Tubal wall	Normal		Thin	Thick

Stage 1 (2-5) ; stage 2 (6-10) ; stage 3 (11-15) ; stage 4 (>15)

AFS adhesion Score

	ADHESIONS	< 1/3 Enclosure	1/3-2/3 Enclosure	>2/3 Enclosure
OVARY	R Filmy	1	2	4
	Dense	4	8	16
	L Filmy	1	2	4
	Dense	4	8	16
TUBE	R Filmy	1	2	4
	Dense	4*	8*	16
	L Filmy	1	2	4
	Dense	4*	8*	16

**If the fimbria end of the fallopian tube is completely enclosed, change the point assignment to 16*

Stage I : no adhesions, Stage II : mild adhesions (1-6) ; stage III : moderate adhesions (7-15) ; stage IV : severe adhesions (>15)

Table 2 : Flow chart of the study

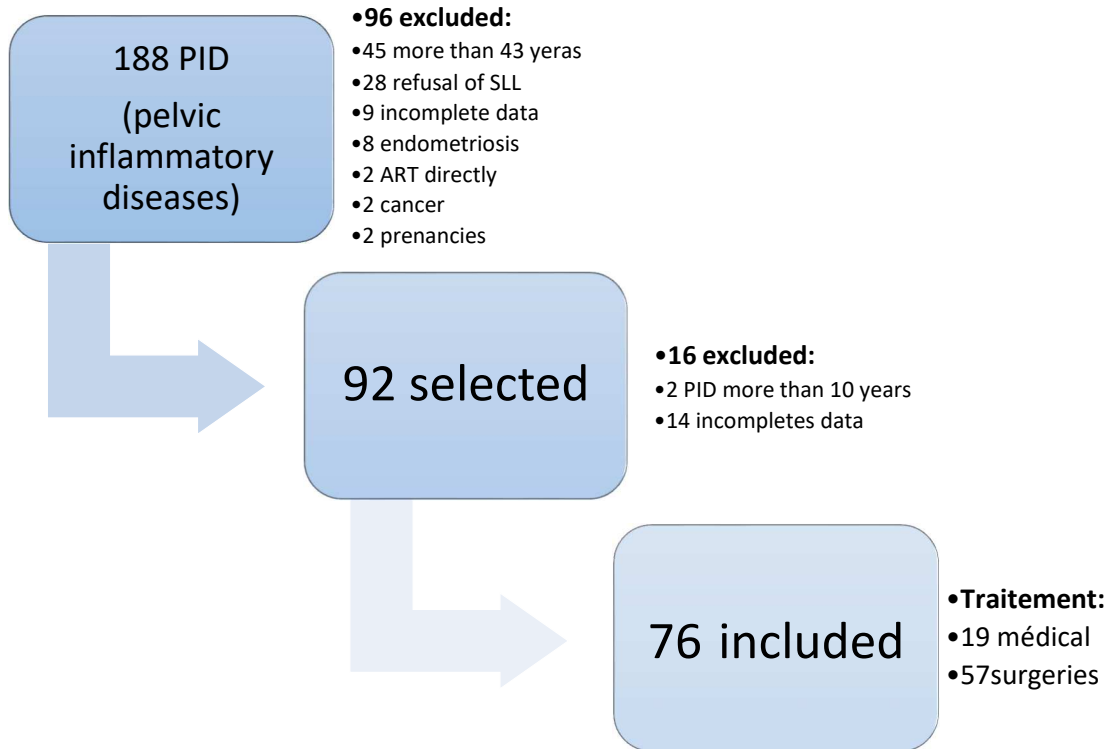


Table 3: Patient and PID characteristics, treatment and second-look laparoscopy

	Total (n=76)
Age (years)	27.6 ± 8.5
Age >37 years	14 (18.4)
Medical history	
Abortion	26 (34.2)
Sexually transmitted infections	7 (9.2)
Abdominal-pelvic surgery	26 (34.2)
Intrauterine device	22 (28.9)
Smoking	43/64 (67.2)
Symptoms	
Pelvic pain	76 (100.0)
Defense	21 (27.6)
Leucorrhoea	40 (52.6)
Fever >38°C	31 (40.8)
Severe sepsis	2 (2.6)
Paraclinical tests	
Normal echography	9/72 (12.5)
Abscess	34/72 (47.2)
Size of abscess (mm)	43.5 ± 14.5
White blood cells (g/l)	13.3 [9.4; 17.8]
C-reactive protein (mg/l)	92.6 [43.9; 171.0]
Chlamydia serology IgG +	35/48 (72.9)
Chlamydia PCR positive	15/38 (39.5)
Initial treatment	
Antibiotic treatment	76 (100.0)
Surgical treatment	57 (75.0)
Adhesiolysis	53/57 (93)
Salpingectomy	3/57 (5.3)
Drainage	25/57 (43.9)
PID stage	
1	6/57 (10.5)
2	18/57 (31.6)
3	33/57 (57.9)
Second-look laparoscopy	
Indication	
Systematic	46 (60.5)
Pelvic pain	16 (21.1)
Imagery	14 (18.4)
Length of surgery (minutes)	37 [30; 51]
Adhesions score (AFS)	
Stage I-II (none or small)	18 (23.7)
Stage III (moderate)	25 (32.9)
Stage IV (severe)	33 (43.4)
Perihepatitis (Fitz Hugh Curtis)	8 (10.5)
Tubal score (MAGE)	
Stage 1	52/72 (72.2)
Stage 2	6/72 (8.3)
Stage 3	5/72 (7.0)
Stage 4	9/72 (12.5)
Adhesiolysis	60 (78.9)
Salpingectomy	15 (19.7)
Neostomy or fimbrioplasty	17 (22.4)

Data are presented as frequencies (associated percentage), as mean ± standard deviation, or as median [interquartile range].

Table 4: Second look laparoscopy (SLL) characteristics depending on initial PID stage(n = 57 patients)

	Stage 1 or 2 (n=24)	Stage 3 (n=33)	p-value
Paraclinical tests			
Normal echography	2/21 (9.5)	1/32 (3.1)	0.34
Abscess	6/21 (28.6)	25/32 (78.1)	<0.001
White blood cells (g/l)	10.2 [7.9; 15.3]	15.6 [12.9; 19.2]	0.004
C-reactive protein (mg/l)	90.2 [39.8; 132.0]	91.7 [37.0; 188.0]	0.42
Chlamydia serology IgG	11/14 (78.6)	16/26 (61.5)	0.32
PCR positive chlamydia	8/13 (61.5)	3/14 (21.4)	0.03
Initial surgery			
Severe adhesions (stage IV AFS)	6 (25.0)	24 (72.7)	<0.001
Salpingectomy	0 (0)	3 (9.1)	0.26
Abscess drainage	3 (12.5)	22 (66.7)	<0.001
Second-look laparoscopy			
Adhesions score (AFS)			
Stage I-II (none or small)	6 (25.0)	4 (12.1)	0.02
Stage III (moderate)	12 (50.0)	8 (24.3)	
Stage IV (severe)	6 (25.0)	21 (63.6)	
Tubal score (MAGE)			
Stage 1	21/23 (91.3)	16 (48.5)	<0.001
Stage 2	0/23 (0.0)	6 (18.2)	
Stage 3	2/23 (8.7)	2 (6.0)	
Stage 4	0/23 (0.0)	9 (27.3)	
Adhesiolysis	20 (83.3)	29 (87.9)	0.71
Salpingectomy	1 (4.2)	10 (30.3)	0.02
Neostomy or fimbrioplasty	6 (25)	10 (30.3)	0.66

Data are presented as frequencies (associated percentage), as mean ± standard deviation, or as median [interquartile range].

Table 5: Fertility according to tubal and adhesion score during second-look laparoscopy (n=30)

	n	Pregnancies	Ectopic pregnancies	Deliveries
Adhesions score (AFS)				
Stage I-II (none or small)	7	5/7 (71.4)	0/7 (0.0)	4/7 (57.1)
Stage III (moderate)	9	8/9 (88.9)	0/9 (0.0)	7/9 (77.8)
Stage IV (severe)	14	10/14 (71.4)	2/14 (14.3)	5/14 (35.7)
<i>p-value</i>		0.64	0.49	0.13
Tubal score (MAGE)				
Stage 1	24	19/24 (79.2)	0/24 (0.0)	15/24 (62.5)
Stage 2	4	2/4 (50.0)	1/4 (25.0)	1/4 (25.0)
Stage 3	0	0	0	0
Stage 4	2	2/2 (100.0)	1/2 (50.0)	0/2 (0.0)
<i>p-value</i>		0.27	0.03	0.14

Data are presented as frequencies (associated percentage).