REVIEW

MICROLAPAROSCOPY IN GYNECOLOGY: ANALYSIS OF 16 CASES AND REVIEW OF LITERATURE

Fabio Ikeda, Maurício Simões Abrão, Sérgio Podgaec, Alexandre Pupo Nogueira, Rosa Maria Neme and José Aristodemo Pinotti

Microlaparoscopy represents the development of endoscopic surgery towards a minimally invasive surgical procedure. The advantages include fewer surgical complications, faster return to daily activities, more comfortable postoperative recovery, and satisfactory aesthetic results. The possibility of performing surgery under sedation may result in shorter hospitalization, lower hospital costs, and easier anesthetic procedures.

The authors report their preliminary experience with the use of microlaparoscopy, using optics and 2mm instruments, as well as a review of the literature since the introduction of this new technique. The report of these 16 cases demonstrates that microlaparoscopy is a feasible technique with satisfactory results. On the other hand, this new technique requires precise indications and a training period for the development of the skills necessary for performing these surgeries.


Laparoscopy has been used since the beginning of the 20th century and became known as a diagnostic and therapeutic procedure in gynecology in the 1970s. In the 1980s with the coming of video-laparoscopy, it was much more widespread, offering more comfort during the surgery and more advanced procedures17. In the beginning of the 1990s, with the concept of minimally invasive surgery, a new technique, microlaparoscopy, started being developed using optics and instruments smaller than 5mm in diameter18.

Dorsey & Tabb8 and Risquez et al.22 were the first to mention this endoscopic method8,22. However, these cases did not have the expected impact because of the poor quality of the image. Risquez et al.21, performed 30 microlaparoscopies obtaining an improvement of the image and presenting more indications for the use of this method21.

At that time, technology had greatly improved, and the development of endoscopes with better fiber optics permitted clearer images with a scope of a smaller diameter. Therefore, it became possible to perform diagnostic laparoscopy and small treatments, such as cauterization of endometriosis foci, adhesiolysis, tubal sterilization, appendectomy, and assisted reproduction procedures, such as ZIFT (zygote intrafallopian transfer) and GIFT (gamete intrafallopian transfer)4,7,9,11,23,24. Later, a microlaparoscopic hysterectomy was performed, demonstrating that this technique is feasible even for more complex procedures25.

The main advantages obtained with the reduction in the caliber of the instruments are decrease in the surgical trauma and the patients’ costs due to the shorter period of recovery1.

The aim of this study is to report 16 cases in which microlaparoscopy with diagnostic and therapeutic purpose was performed. These cases had satisfactory results and open promising perspectives for many different indications.

The first cases using sedation and local anesthesia were also analyzed, demonstrating benefits over general anesthesia.

ANALYSIS OF 16 CASES

The microlaparoscopy procedure was indicated in situations in which there was no possibility of removing large tissue samples from the abdominal cavity. The patients’ ages ranged from 18 to 42 years. There was no as-
associated intercurrent factor for any of the patients.

Twelve female patients underwent general anesthesia with fentanyl (5µg/kg), propofol (2mg/kg) and atracurium (0.4 to 0.5mg/kg) following inhalation of isoflurane and subsequent orotracheal intubation. Four female patients underwent conscious sedation and local anesthesia with satisfactory results. These patients showed a normal body mass index with no suspicion of large pelvic adhesions. The sedation was administered using midazolam (5 to 10 mg) and fentanyl chloridrate (2µg/kg), and using an additional 1µg/kg as necessary.

In all the cases, local anesthesia was administered with infiltration of 5mL 0.5% bupivacaine into the surgical sites and instillation of 40mL 0.5% lidocaine over pelvic structures.

The surgery was performed with a 2-mm microfiberoptic microlaparoscope (Auto-Suture, United States Surgical Corporation, USA), which was introduced into the abdominal cavity with a 2mm trocar, acting simultaneously as a Veress needle. Thus, before placing the pneumoperitoneum, the microlaparoscope may be introduced in the cavity to check correct position of the cannula in order to avoid the injection of carbonic gas erroneously into the pre-peritoneum.

The accessory punctures were performed with trocars similar to those described above, 2-mm or 5-mm in diameter when there was need to remove larger samples from the abdominal cavity. The 2-mm forceps used were made of titanium, offering adequate precision and satisfactory resistance. The pneumoperitoneum was maintained with intrabdominal pressure of 9mm Hg.

A uterine manipulator was used in most of the cases, which was fundamental to providing an adequate exposition of the pelvic organs.

In 14 surgeries, the postoperative diagnostic was minimal or mild endometriosis, exposing a disease appropriately approached by microlaparoscopy. In 1 case, endometriosis was characterized as moderate (according to standards from the American Society for Reproductive Medicine, 1996). In all the cases, biopsy, resection, and cauterization of endometriosis foci were done. Salpingostomy for an ectopic pregnancy, myomectomy, and adhesiolysis were other performed surgeries.

Table 1 describes reported cases with more details.

**DISCUSSION**

Nowadays, after lengthy studies on microlaparoscopy, many authors have been using this new surgical approach, which has become a feasible new diagnostic and therapeutic option in selected cases.

In several studies, the diagnostic accuracy between the 2-mm and the 10-mm telescope was the same. The patients described in this article were operated on with adequate images, and the performance of microlaparoscopy was a feasible technique (Fig.1). The endometriosis lesions that were the indications for most of the surgeries were easily identified, leaving no doubt about their presence.

The possibility of simplification of anesthesia in some cases of microlaparoscopy may bring interesting benefits, such as reduction in the hospitalization and postoperative pain. Bauer et al. studied the administration of microlaparoscopy procedures with sedation and local infiltration, listing the anesthetic methods.

The achieved results in our cases were satisfactory, emphasizing that the incidence of nausea was insignificant, and no orotracheal discomfort with se-

<table>
<thead>
<tr>
<th>Table 1 – Analysis of 16 cases of microlaparoscopy.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>35 years</td>
</tr>
<tr>
<td>42 years</td>
</tr>
<tr>
<td>18 years</td>
</tr>
<tr>
<td>36 years</td>
</tr>
<tr>
<td>38 years</td>
</tr>
<tr>
<td>41 years</td>
</tr>
<tr>
<td>41 years</td>
</tr>
<tr>
<td>35 years</td>
</tr>
<tr>
<td>28 years</td>
</tr>
<tr>
<td>26 years</td>
</tr>
<tr>
<td>34 years</td>
</tr>
<tr>
<td>31 years</td>
</tr>
<tr>
<td>21 years</td>
</tr>
<tr>
<td>18 years</td>
</tr>
<tr>
<td>28 years</td>
</tr>
<tr>
<td>23 years</td>
</tr>
</tbody>
</table>

EDT: endometriosis; HC: hemorrhagic cyst; EP: ectopic pregnancy; R: endometriosis resection; C: endometriosis cauterization; M: myomectomy; S: salpingostomy
it can be an ambulatory surgery center. However, allowed the intervention to be done in
no report of postoperative infection. was closed with adhesive tape. There was
with no need for skin suture. The incision
laparoscopy.
dominal discomfort than conventional
shorter with reduction of pain and ab-
benefits to these cases 2 .
accuracy to the procedure, with desired
	car. This innovation has brought more
aged, and adaptable to the 2-mm tro-
puncture was needed in a virgin pa-
structure exposure. An auxiliary
nipulator was essential to a satisfactory


The simplification of the anesthesia
was observed. The adequate sele-
tion of the patients is fundamental. The surgery should be rapid and accu-
rate because the patient is awake.
The reduction in the amount of car-
bonic gas used for the pneumoperito-
neum was essential, because when the abdominal pressure was higher than
15-mm Hg or the carbonic gas volume
was higher than 2.5 liters, patients ex-
perienced discomfort 23 .
The mean time of postoperative hos-
hospitalization was shorter for the pa-
tients that had received sedation (mean
time 4 hours) compared with those
who had received general anesthesia
(mean time 17 hours).
The utilization of the uterine ma-
ipulator was essential to a satisfactory pelvic structure exposure. An auxiliary
puncture was needed in a virgin pa-
ent, since this use was not possible.
In some cases, a diode laser was
used, which was portable, easily man-
ged, and adaptable to the 2-mm tro-
car. This innovation has brought more accuracy to the procedure, with desired
benefits to these cases 3 .
The postoperative recovery was
shorter with reduction of pain and ab-
dominal discomfort than conventional laparoscopy.
The aesthetic results were adequate,
with no need for skin suture. The incision
was closed with adhesive tape. There was
no report of postoperative infection.
The simplification of the anesthesia
allowed the intervention to be done in
an ambulatory surgery center. However,
there are still doubts whether it can be
performed in a gynecologist office.
Palter & Olive in 1996 and
Almeida & Val-Gallas in 1998 per-
formed office microlaparoscopies 3,19 .
These authors recommend this tech-
nique to patients with chronic pelvic pain, and it may be performed with lo-
cal anesthesia and light conscious se-
dation. However, some authors do not
agree with office microlaparoscopy
and suggest an ambulatory surgical
room for these procedures 11 .
Analyzing the postoperative pain, a
minor incidence of abdominal and
scapular pain has been reported, as
well as the necessity for analgesics in
microlaparoscopy 14 . Abdominal instil-
lation and local infiltration of anesthet-
sics have benefited the patients 12,20 . This
procedure was performed in all the
cases reported in this paper.
Risquez et al. 23 published a multicen-
tric report of 408 cases, the biggest study
of this technique. The patients were di-
vided into 3 groups according to the type
of anesthesia. The first group received
only local anesthesia and oral diazepam;
the second, sedation and local anesthe-
sia; and the third, general anesthesia
without orotracheal intubation. From this
work, we conclude that microlapa-
roscopy is effective as a diagnostic tech-
nique and for some therapeutic proce-
dures, such as adhesiolysis, endometrio-
sis cauterization, embryo transfer, and
salpingostomy. The most satisfactory an-
esthetic technique depends on the char-
acteristics of each patient.
Another possible innovation with
this method is conscious pain mapping,
where the patient helps the surgeon lo-
calize the painful areas, making it pos-
sible to perform appendectomy by
mapping 3 . In patients without pelvic
diseases, some areas are painful when
touched, extended, or compressed.
Thus, the stretching of the fallopian
tube or of the utero-ovarian ligament
caused a lot of discomfort, while in the
manipulation of omentum, bowels, and
ovary, the pain was not notable 26 .
An additional use of the micro-
laparoscopy consists of the preliminary
visualization of the umbilical region in
patients with extensive previous abdomi-
nal surgeries. In these cases, a
microlaparoscope could be introduced in
the left hypochondrium (Palmer point) to
verify the presence of adhesions in the
umbilical area. If possible, the lysis could
be accomplished by introducing the tradi-
tional forceps into the iliac fossas 15 .
With microlaparoscopy, there has
been a reduction in surgical complica-
tions due to the possibility of visualizing
the abdominal cavity before the pneu-
peritoneum is installed, avoiding the
insufflation of erroneous places such as the subcutaneous layer or
reteropectum 5 . Incisional herni-
ations are rare since the cannula is
smaller 14 . With the reduction of the
pneumoperitoneum pressure, a smaller
amount of carbonic gas is utilized, which
prevents the pain in the shoul-
der that is usually experienced in con-
ventional laparoscopies. In the patients
included in this study, there were no
surgical complications, and none of the
patients complained about pain in the
scapula in the postoperative period.
As a disadvantage of this method,
microlaparoscopy requires new train-
ing even for the experienced lapa-
rosopic surgeons because there is a 30
to 40% reduction of the skill using the
2-mm instruments 38 . When compared
with traditional laparoscopy using a
10-mm telescope, microlaparoscopy
offers a 40% smaller visual field, mak-
ing it more difficult to centralize and
focalize the image 12,23 . Additionally, the
instruments are more delicate and re-
quire adequate skill to operate.
Probably in the near future, micro-
laparoscopy will be a routinely used
 technique for endoscopic procedures. Nowdays, this method represents an
interesting alternative to some easier
interventions, and the simplification of
anesthesia may still bring more ben-
efits, drastically reducing the socioeco-
nomic and psychologic costs of surgi-
cal procedures.
RESUMO

A microlaparoscopia representa a evolução da cirurgia endoscópica, visando um procedimento cirúrgico mininamente invasivo. As suas vantagens incluem a redução das complicações cirúrgicas, retorno às atividades mais rápidas, período pós-operatório mais confortável e resultado estético satisfatório. A possibilidade da realização sob sedação pode resultar em internação hospitalar menor, diminuição dos custos hospitalares, além da simplificação do procedimento anestésico.

Os autores relatam sua experiência inicial com a microlaparoscopia, utilizando óptica e instrumentais de 2mm, assim como uma revisão dos trabalhos publicados desde a introdução dessa nova técnica. O relato destes 16 casos mostrou ser a microlaparoscopia exequível, apresentando resultados satisfatórios. Por outro lado, o seu uso requer indicações precisas e treinamento para manipular o instrumental.


REFERENCES

Received for publication on December 12, 2000.