

CT-guided drainage with percutaneous approach as treatment of *E. Faecalis* post caesarean section severe abscess: case report and literature review

V. LEANZA¹, V. LO PRESTI¹, F. DI GUARDO¹, G. LEANZA², M. PALUMBO¹

SUMMARY: CT-guided drainage with percutaneous approach as treatment of *E. Faecalis* post caesarean section severe abscess: case report and literature review.

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We report a case of a 32-year old woman with severe pelvic abscess formation who was readmitted to the hospital after ten days of postoperative caesarean course. The patient had undergone emergency

caesarean section (CS) for acute foetal sufferance during expulsive period and following three days had been discharged regularly. Enterococcus Faecalis was isolated from purulent material. A prompt antibiotic therapy was carried out, therefore clinic condition did not improve. A percutaneous Computed Tomography (CT)-guided drainage of the abscess was planned. Under local anesthesia abscess was drained. The hospitalization stay allowed monitoring the patient's clinical condition and laboratory blood panel until normalization of all parameters.

KEY WORDS: Caesarean - Abscess - Drainage - Enterococcus - Computed Tomography.

Introduction

Enterococcus faecalis belongs to the large family of *Enterococci* that are bacteria commonly living as saprophytes in gastro-intestinal tract. Regarding the great resilient capacity of the *Enterococcus faecalis*, it is recognized this bacterium being able to survive in other habitat such as mouth and vagina. However, its contamination in other areas results in more serious infections and often life-threatening; dangerous diseases including sepsis, endocarditis, and meningitis are reported (1). *Enterococci* can be isolated from polymicrobial or rarely monomicrobial cultures of soft tissue infection as well as intra-abdominal and pelvic infections. Wound contamination and abscesses caused by *Enterococci* are commonly associat-

ed with bacteraemia (2). Clinical management mainly consists in using antibiotics. In severe case of abscess collection, medical therapy is not sufficient and other procedures are requested, among them the drainage in the site of infected material. It could be inserted in many ways: blindly or by means of either ultrasounds or Computed Tomography (CT) across the skin or Douglas recto-vaginal septum.

Postpartum pelvic abscesses in 1% of cases should be the results of an endometritis and the most common sites involved are vesico-uterine space, broad ligament and posterior cul-de-sac (3). Hospitalization is one of the most important risk factor for the *Enterococci* infection but, fortunately during the last decade, the postpartum infections have been decreasing by means of great diffusion of antibiotic prophylaxis. The traditional treatment of the pelvic abscesses was surgical and consisted in a laparotomic incision with washing. However, due to improvement of the imaging as for as ultrasonography (US) and computed tomography (CT), percutaneous imaging-guided pelvic abscess drainage is an

¹ Surgery Department Policlinico Vittorio Emanuele University Hospital, Catania, Italy

² Obstetric Gynecologic Unit, S. Marta and S. Venera Hospital, Acireale (Catania), Italy

Corresponding author: Vito Leanza, e-mail: leanzavito53@gmail.com

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effective alternative to more invasive surgical techniques. Moreover, the abscess drainage should be performed only rarely across the transrectal, and transgluteal approaches (4-6).

Case report

A 32-year old Caucasian gravida II, para I, was readmitted to the hospital after ten days of postoperative caesarean course owing to abdominal pain, hyperpyrexia and diarrhoea. The patient had undergone emergency caesarean section (CS) for acute foetal sufferance during expulsive period and following three days had been discharged regularly.

During caesarean section, the patient received an intravenous single shot of antibiotic prophylaxis with cefazolin 2 g. Standard operation procedure was performed and the abdomen was incised according to Pfannenstiel. The extraction was challenging because of difficulty during foetal disengagement and the help of digital vaginal pushing was requested. The baby was born with 7/8 APGAR score, weight 3430 g, pH 7.18. No other intraoperative complications were reported. The first postoperative days were uneventful and the patient was discharged healed on the fourth postoperative day. Ten days after CS, the patient was readmitted to the emergency unit owing to lower abdominal pain and diarrhoea, with recurrent fever above 38°C. Her upper abdomen was soft, whereas uterus and adnexa were slightly painful with palpation. Uterine fundus was 1 cm below the umbilicus. With ultrasounds an inhomogeneous 99x43 mm mass located in abdominal cavity above and laterally the uterine walls was detected. Douglas pouch was obliterated. This collection was considered being of suppurative nature. Intravenous medical treatment with metronidazole 500 mg and tazocin 500 mg three times a day was carried out. Moreover, tigecycline protocol was added in accordance with temperature pick and blood culture. Blood panel showed leukocytosis: $21 \times 10^3/\mu\text{L}$ (range 5.20-12.40 $\times 10^3/\mu\text{L}$); neutrophilia: 85.6% (range 40.0-74.0%) and an increase of C-reactive protein: 179 mg/dL (range 0-5 mg/dL).

Finally a CT scan was planned. The result confirmed a wide abscess, located in the pelvis area above the uterine corpus more extended on the left side.

After a polyspecialistic consultation between gy-

naecologists and radiologists, the pelvic abscess was percutaneously drained under CT-guidance. 300 cc of purulent transudate was suctioned and sent for microbiological culture resulting *Enterococcus Faecalis*. The drainage catheter was left in site for 3 days until the complete evacuation of abscess. After 3 days, a CT scan was repeated confirming a great improvement of abscessual area (Figure 1); blood analysis showed a reduction of leukocytes ($13 \times 10^3/\mu\text{L}$) and of C-Reactive Protein (70 mg/dL) (Figure 2).

When abscess appeared completely drained the indwelling catheter was removed. Following recommendation of the microbiologists, medical therapy with metronidazole/tazocin, was continued for 2 weeks while tigecycline for 1 week. The patient was discharged in good health 7 days after drainage. Clinical and laboratory follow-up was regular after three, seven and thirty days.

Discussion

This case report offers to consider some aspects that are clinically interesting among them:

1. Modality of birth and infection risk
2. Management.

Regarding infection correlated to birth, vaginal operative deliveries are at high risk. Endometritis is considered the most common obstetric infection of post-partum, the reason of its high incidence is mainly related to some factors as lack of prophylactic antibiotics, contamination of pathogens during labour or CS. Moreover, post-caesarean endometritis seems to be associated mainly to young age, low socio-economic status, lasting labour, rupture of membranes, multiple vaginal examinations, cephalopelvic disproportion and manual manoeuvres during foetal extraction (3, 7). Literature underlines the great importance of antibiotic prophylaxis for labour; it is estimated that, up to 30-40% of women undergoing emergency CS in absence of antibiotic prophylaxis develop postoperative infection, on the contrary after a planned CS the infective risk is much less about 10% (8).

Retrospectively, we can analyse some risk factors that could have facilitated the severe postpartum infection: lengthening of expulsive phase and digital manoeuvre for foetal extraction. Because expulsive phase starts when cervical dilation is complete and

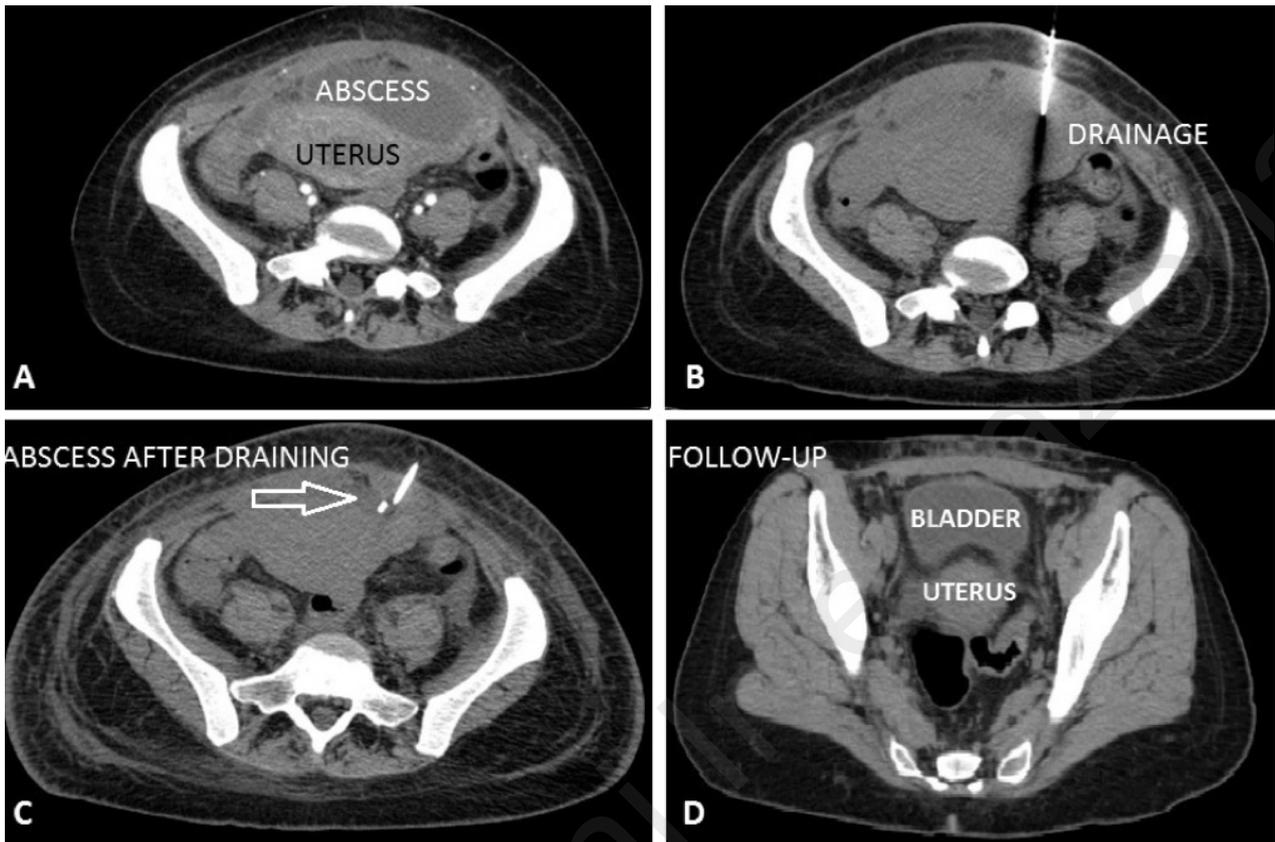


Figure 1 - CT transversal imaging of abscess formation in front of uterus. A) Abscess located in the pelvis area above the uterine corpus more extended to the left. B) Percutaneous drain under CT-guidance. C) Pelvic abscess after draining. D) CT imaging in a month follow-up.

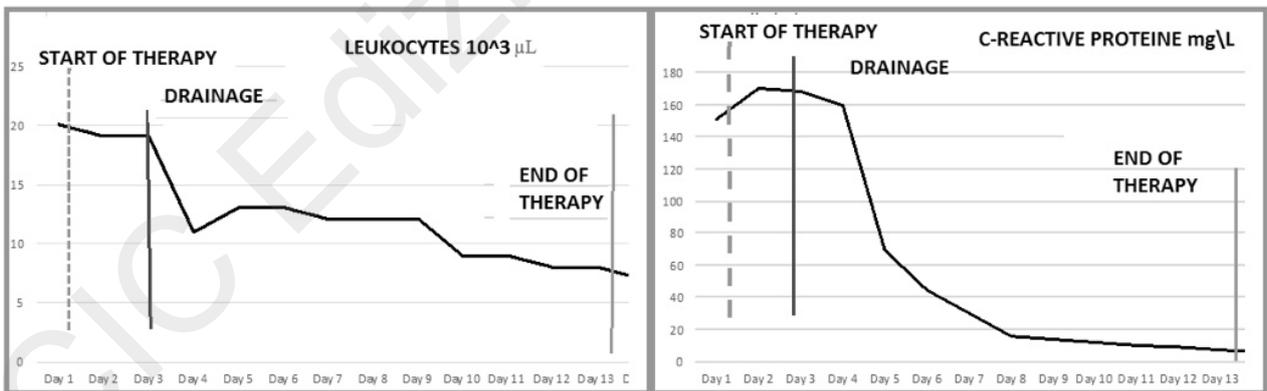


Figure 2 - Leukocytes and C-reactive protein curves after abscess draining.

the membranes are ruptured, both uterine cavity and foetus are not protected and can be infected by ascendant bacteria. It is the case of our report.

In addition, meconium-stained liquor might have additive role acting as a foreign body in abdominal cavity, when some residual remains in contact

with peritoneum abscess may arise giving generalized or saccular peritonitis. Our abscess culture resulted positive for *Enterococcus Faecalis*. *Enterococci* are bacteria commonly living as saprophytes in the gastro intestinal tract, nevertheless sometimes they can be also isolated from polymicrobial cultures of soft tis-

sue as well as intra-abdominal and pelvic cavity. Infection of wounds and abscesses caused by enterococci are commonly reported and associated with blood diffusion (9). *Enterococcus Faecalis* belongs to the large family of *Enterococci* and due to its great resilient capacity, is able to survive in other habitat such as mouth and vagina. However, contamination of other areas results in more serious infections and often life-threatening diseases including sepsis, endocarditis and meningitis may arise. Pathogens considered of high virulence for postpartum and postoperative infection mainly include: *Ureaplasma urealyticum* and *Mycoplasma hominis*, other than *Gardnerella vaginalis* and *A. Schaalii* (10). Considering those factors, in our case the single-shot prophylaxis with a broad-spectrum antibiotic given for CS, was insufficient to stop bacterial infection which was latent during three days post-caesarean course and the wellbeing of patient was apparent. The late onset of clinical appearance of infection needed the re-hospitalization of patient for further therapy.

Regarding the management of sacular abscess the surgical drainage by means of laparotomic incision was historically considered the gold standard, but nowadays a less invasive percutaneous CT or ultrasound guided drainage can be used (11). Obviously, the suppurative material should be usefully obtained for Gram stain, culture and sensitivity. Literature refers that the duration of hospitalisation and the need of surgical drainage are directly correlated to the development of the abscess (12, 13). The enlarging in size of 1 cm for tubo-ovarian abscess, is associated with an increased hospitalization of 0.4 days. Moreover, the average abscessual size for drainage and/or surgery is 7.7 cm and the risk of complications are greater for huge abscess (>8 cm) (12). Potential routes for radiological guidance draining are transvaginal, transrectal, transabdominal and transgluteal (14, 15). All the procedures used should be performed with a concomitant antibiotic therapy. The success rate of the simple broad-spectrum intravenous antibiotics for not drained pelvic abscess ranges between 34 and 88% (16). The recommended regimen for postoperative infections in gynaecologic patients, is the combination of clindamycin or metronidazole plus penicillin or ampicillin plus gentamicin. Alternatively, extended spectrum cephalosporins, penicillins or carbapenems may be used as single agents (level I evidence) (17). Po-

tential sequelae of pelvic abscesses should be still taken into account, including secondary infertility, pelvic inflammatory disease (PID), ectopic pregnancy, chronic pelvic pain and hydrosalpinx (11-29).

Conclusions

In case of high risk infection delivery, an opportune antibiotic therapy is able to prevent suppurative complications, anyway, when an infection arises and medical therapy is inadequate, abscess formation must not be underestimated. After diagnosing a pelvic abscess, a suitable mini-invasive guided evacuation with extraction of "pus bonum et laudabile" is a good choice and must be taken into account. In this report the aforementioned procedure allowed the recovery of a severe infection.

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