

1 **Running title:** Isthmocele and laparoscopic repair

2 **LAPAROSCOPIC REPAIR OF A SYMPTOMATIC POST CESAREAN ISTHMOCELE:**
3 **A VIDEO CASE REPORT**

4 Aimi Giorgio M.D.¹ giorgio.aimi@unimi.it

5 Buggio Laura, M.D.¹ buggiolaura@gmail.com

6 Berlanda Nicola, M.D.¹ nicola.berlanda@gmail.com

7 Vercellini Paolo, M.D.¹ paolo.vercellini@unimi.it

8 From the ¹Unità Operativa Dipartimentale Ginecologia Chirurgica e Endometriosi, Fondazione
9 Istituto di Ricovero e Cura a Carattere Scientifico Ca' Granda Ospedale Maggiore Policlinico and
10 Università degli Studi di Milano, Milano, Italy

11 This article was financed by Italian fiscal contribution "5x1000" - Ministero dell'Istruzione,
12 dell'Università e della Ricerca - devolved to Fondazione Istituto di Ricovero e Cura a Carattere
13 Scientifico Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy.

14 **Correspondence:** Laura Buggio, M.D.

15 ¹Unità Operativa Dipartimentale Ginecologia Chirurgica e Endometriosi, Fondazione Istituto di
16 Ricovero e Cura a Carattere Scientifico Ca' Granda Ospedale Maggiore Policlinico and Università
17 degli Studi di Milano, Via Commenda, 12 - 20122 Milan, Italy

18 Tel: +39.02.5503.2917; fax: +39.02.50320264; e-mail: buggiolaura@gmail.com

19 **Financial Disclosure:** The authors did not report any potential conflicts of interest.

20

21 CAPSULE

22 Video article describing laparoscopic management of symptomatic post cesarean isthmocele.

23 ABSTRACT

24 OBJECTIVE: To describe our technique for laparoscopic management of post cesarean isthmocele.

25 DESIGN: Surgical video article. Local Institutional Review Board (IRB) approval for the video
26 reproduction has been obtained.

27 SETTING: University hospital.

28 PATIENT(S): A 36-year-old patient with a history of two previous cesarean deliveries. She
29 complained of persistent postmenstrual spotting and chronic pelvic pain. At transvaginal ultrasound
30 examination, a cesarean scar defect of 20.0x15.6 mm was identified, with a residual myometrial
31 thickness over of the defect of 2.6 mm.

32 INTERVENTION: Isthmocele excision and myometrial repair was performed laparoscopically. The
33 first step of the procedure was the cautious mobilization of the bladder from its adhesions with the
34 site of the previous cesarean scar. Subsequently, the isthmocele site was identified with the aid of
35 an intraoperative transrectal ultrasonography. Transrectal ultrasonographic assistance is particularly
36 important when a bulge of the cesarean scar is not laparoscopically visible. Once identified, the
37 isthmocele pouch was incised and its pitchy content drained. Then, the cesarean scar was excised
38 with cold scissors, avoiding cauterization in order to reduce the risk of tissue necrosis. This step is
39 considered completed when the whitish scar tissue of the isthmocele site margins are no longer
40 present and reddish healthy myometrium is visualized. Before suturing the defect, a Hegar dilatator
41 was placed into the cervix with the aim of maintaining the continuity between the cervical canal and
42 the uterine cavity. Then, the myometrial repair was performed with a single layer of interrupted 2-0
43 Vycril® sutures. We prefer not to add a second layer of sutures in order to limit tissue ischemia.

44 Finally, the visceral peritoneum defect was closed, with the aim of restoring the physiological
45 uterine anatomy. In this case, multiple peritoneal endometriotic implants were also identified and
46 excised.

47 MAIN OUTCOME MEASURE AND RESULTS: Operating time was 70 minutes. The post-
48 operative course was uneventful and the patient was discharged on postoperative day 2. At 40-day
49 postoperative follow-up, transvaginal and transabdominal ultrasonography showed complete
50 anatomical repair of the uterine defect. At three-month follow-up, the patient reported resolution of
51 post-menstrual spotting and chronic pelvic pain.

52 CONCLUSION: Good reproductive outcomes have been reported after hysteroscopic treatment of
53 uterine isthmocele. However, laparoscopy has the advantage over hysteroscopy of allowing
54 thorough repair of the uterine defect, thus restoring a normal myometrial thickness. Therefore, as
55 demonstrated in this case, a laparoscopic approach might be considered the procedure of choice for
56 the repair of a large uterine isthmocele with extreme thinning of the residual myometrium.

57 KEYWORDS: Isthmocele; Cesarean scar defect; laparoscopy; complication of cesarean; Cesarean
58 section; niche.

59 SUGGESTED READING

- 60 1. Donnez O, Donnez J, Orellana R, Dolmans MM. Gynecological and obstetrical outcomes
61 after laparoscopic repair of a cesarean scar defect in a series of 38 women. *Fertil Steril*
62 2016;Nov 2. pii: S0015-0282(16)62853-4. doi: 10.1016/j.fertnstert.2016.09.033. In press.
- 63 2. Nezhat C, Falik R, Li A. Surgical management of niche, isthmocele, uteroperitoneal fistula,
64 or cesarean scar defect: a critical rebirth in the medical literature. *Fertil Steril* 2016; 2016
65 Nov 16. pii: S0015-0282(16)62935-7. doi: 10.1016/j.fertnstert.2016.10.017. In press.
- 66 3. Futyma K, Gałczyński K, Romanek K, Filipczak A, Rechberger T. When and how should
67 we treat cesarean scar defect - isthmocele? *Gynekol Pol* 2016;87:664-668.
- 68 4. Urman B, Arslan T, Aksu S, Taskiran C. Laparoscopic Repair of Cesarean Scar Defect
69 "Isthmocele". *J Minim Invasive Gynecol* 2016;23:857-8.
- 70 5. Tulandi T, Cohen A. Emerging manifestations of cesarean scar defect in reproductive aged
71 women. *J Minim Invasive Gynecol* 2016;23:893-902.
- 72 6. Api M, Boza A, Gorgen H, Api O. Should Cesarean Scar Defect Be Treated
73 Laparoscopically? A Case Report and Review of the Literature. *J Minim Invasive Gynecol*
74 2015;22:1145-52.
- 75 7. Gubbini G, Centini G, Nascetti D, Marra E, Moncini I, Bruni L, et al. Surgical hysteroscopic
76 treatment of cesarean-induced isthmocele in restoring fertility: prospective study. *J Minim*
77 *Invaseve Gynecol* 2011;18:234-7.