



Case Series

Colo-ovarian Fistula complicating acute diverticulitis: Two cases and literature review



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ABSTRACT

INTRODUCTION: Colonic diverticulosis is common in western world. Fistula formation occurs in 10–20 % of patients, usually as a consequence of an acute inflammatory process (diverticulitis). Fistulas from diverticulitis occur mainly to bladder, small bowel and uterus. Communication between colon and ovary occurred more frequently in the context of primary neoplasms of ovary, ovarian abscess or Crohn's disease. However, colo-ovarian fistula after acute colonic diverticulitis is a rare entity with few cases reported in literature.

PRESENTATION OF CASES: In this article, we described two cases. We also performed a literature review. In both cases, an initial conservative management for acute diverticulitis was performed. The maintenance of symptoms dictated further investigation. The presence of left ovarian abscess was presented, suggesting the presence of fistula.

DISCUSSION: Although the distinct evolution during the initial treatment, which results in different timing for surgery, en bloc resection of colon and adnexa was performed, with favorable outcomes. Final pathological analysis confirmed the diagnosis.

CONCLUSION: Colo-ovarian fistulas complicating acute diverticulitis are rare entities. In this article, we present our experience in the management of two cases, with different surgical approach but favorable outcomes.

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1. Introduction

Colonic diverticulosis is common in western world. The prevalence increases with age, ranging from 10 % in those younger than 40 years up to 50–70% in those older than 80 years. The most common risk factors are obesity, tobacco and alcohol abuse [1]. Fistula formation occurs in 10–20 % of patients [2,3], usually as a consequence of an acute inflammatory process (diverticulitis). Fistula from diverticulitis can occur between colon and, in the order of decreasing frequency, bladder, small bowel and uterus [4]. However, fistula to adnexal

structures is rare, with only few cases reported in literature. We present two cases of colo-ovarian fistula with literature review.

SCARE guidelines 2018 were applied in this article.

2. Patient Information/Case Description

2.1. Case 1

A 29 years old woman, with past medical history of ovarian polycystic disease and a colonoscopy showing diverticulum in left colon, presented in June 2016 with a first non-complicated episode of acute diverticulitis (Fig. 1), treated as outpatient with oral antibiotic (ciprofloxacin plus metronidazole). In March 2017, while patient was 16 weeks pregnant, she presented with a new episode of acute diverticulitis with a 4 cm abscess (Hinchey I) and was treated in-hospital with intravenous antibiotics with good response and resolution of the collection. Follow up MRI (two month later) did

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Fig. 1. Axial Non contrast CT shows sigmoid diverticulosis (arrow) with circumferential thickened wall and associated fat stranding (arrowheads) in keeping with acute non complicated diverticulitis.



Fig. 2. Axial contrast enhanced CT scan performed after acute diverticulitis shows cyst lesion in the left ovary (star) with thickened wall adjacent to the sigmoid colon.

not show evidence of abscess or ovarian cysts. In spite of that, she returned with a new acute episode in October, 2017 (after childbirth), presenting again a 4 cm abscess in CT (Hinchey I) (Fig. 2). Because of the newborn, the patient asked to be treated with oral antibiotic at home, with programmed interval reassessment in emergency room.

The reassessment CT revealed an air-liquid image in left iliac fossa, but the etiology wasn't clear. A transvaginal ultrasound was obtained by a gynecologist, showing a cyst in the left ovary (43 × 34 mm), without complications.

Although negative inflammatory parameters, the patient maintained a lower left quadrant pain. So, it was performed a new MRI (November 2017) (Fig. 3) that revealed a left adnexal collection with gas, measuring 7 × 9.2 × 5 cm; there was not evidence of a fistula track to the colon, although its presence was questioned due to the presence of gas.

A CT guided percutaneous drainage was performed with evidence of pus. The patient was discharged 24 h after procedure (patient request), with oral antibiotic and the drain. The patient was reassessed weekly, keeping a purulent discharge. Two weeks later, a follow up CT revealed a decrease in the collection (4.2 × 3.5 × 4.9 cm) and there was no evidence of fistulous tract (Fig. 4).

Elective surgery was decided after resolution of this last episode. At January 2018, an en bloc laparoscopic resection of the sigmoid colon and left ovary and fallopian tube was carried out by colorectal surgeons, with end-to-end mechanical colorectal anastomosis. At the surgery the sigmoid colon was fixed to the left ovary and an ovarian cyst was seen (Fig. 5).

The postoperative recovery was without complications and the patient was discharged on postoperative Day 6. At follow up the patient was asymptomatic.

Pathological assessment of the specimen showed multiple sigmoid diverticula with a fistula tract into the left ovary. The left ovary (7.5 × 5.0 × 5.0 cm) presented with cystic transformation, an intense acute inflammatory process and the presence of multinuclear giant cells.

2.2. Case 2

A 53 years old woman, with previous medical history of acute diverticulitis (2 episodes, 2012 and 2013) and tubal ligation, presented at emergency department in June, 2018, with complains of abdominal pain and fever. CT was compatible with a new episode of acute diverticulitis with a 3 cm paracolic abscess (Hinchey I)

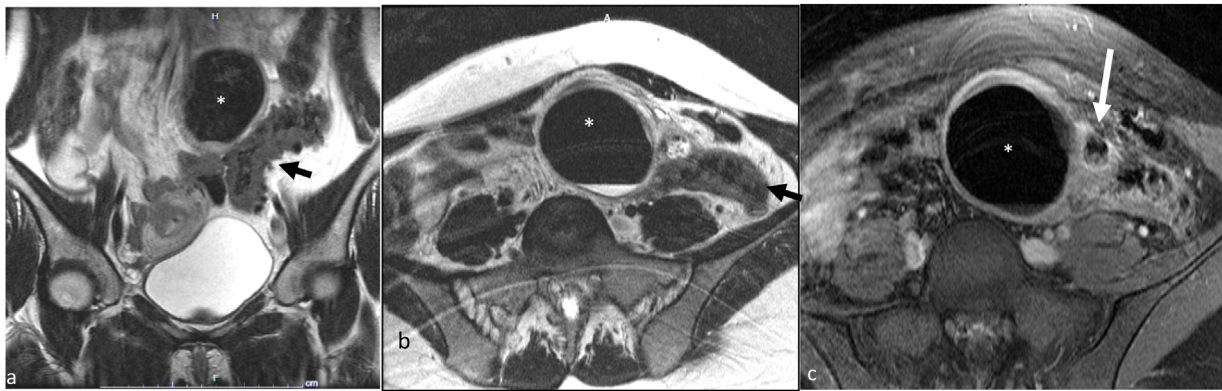


Fig. 3. (a, b): Coronal and axial T2WI shows round hypointense lesion in the left adnexal area abutting the sigmoid colon (arrow) that presents marked wall thickening in keeping with diverticulosis and chronic diverticulitis. The lesion is hypointense due to the presence of air. (c) Post contrast axial T1 fat sat shows the adnexial lesion and a big diverticula (long arrow) bridging the lesion with the sigmoid colon.



Fig. 4. Sagittal enhanced CT scan show hypedense pigtail drain inside the left adnexial lesion (arrow) that presents with an air-fluid level.

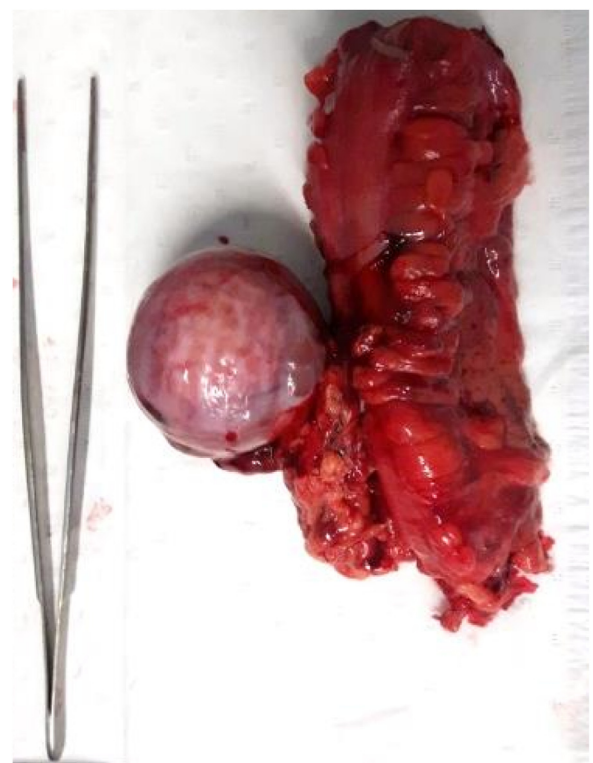


Fig. 5. En bloc removal of sigmoid colon and left ovary.

as well as a suspected left ovarian cyst apparently not related with the colic process (Fig. 6). The patient was admitted and completed 10 days of intravenous antibiotic. During this period, a MRI was performed demonstrating inflammatory alterations of the left ovary and sigmoid colon, without an abscess image or fistulization (Fig. 7). After 10 days and clinical improvement, the patient was discharged. However, she returned to hospital with the same symptoms 12 days later. CT revealed an acute inflammatory process of sigmoid colon and an abscess with $8,5 \times 5,5 \times 3$ cm (Fig. 8).

Submitted to a CT guided percutaneous drainage with purulent discharge observed. Intravenous antibiotic (ceftriaxone plus metronidazole) was initiated. After a week the CT was repeated and the collection had the same dimensions. A presence of fistula was questioned. The drain was replaced and the antibiotic therapy suited according to microbiology of purulent discharge, but the patient maintained the symptoms, and surgery was proposed.

Before surgery, the patient performed a CT with rectal contrast, revealing diverticulosis of sigmoid colon, the abscess, now with 53×37 mm, but without contrast passage between both (Fig. 9). A proctosigmoidoscopy showed signs of acute diverticulitis (Fig. 10).

The surgery was performed three weeks after the percutaneous drainage. An intense inflammatory reaction involving sigmoid colon and left ovary and fallopian tube was seen. An en bloc laparoscopic resection of the sigmoid colon and left ovary and fallopian tube was performed by colorectal surgeons, without primary anastomose.

The postoperative period occurred without complications and a good recovery was observed. The patient was discharged at 6th day after surgery. At follow up consultation, presented without complains. A total colonoscopy was performed and no lesions were found and a stoma reversal surgery was programmed.



Fig. 6. Post contrast axial CT scan shows wall thickening of the sigmoid colon with diverticulosis (short arrow) abutting without fat plane with the ipsilateral ovary (long arrow). In the medial aspect of the ovary a fluid collection is present (star).

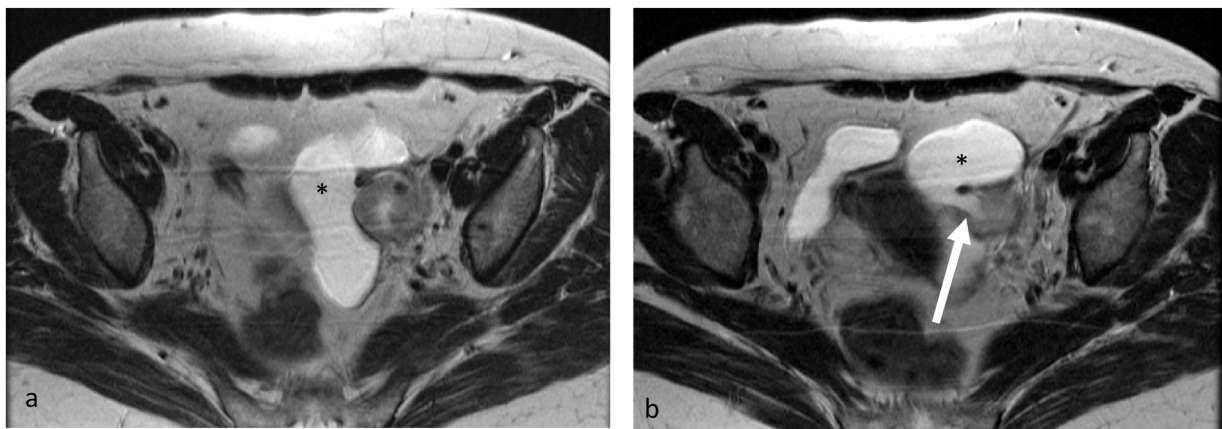


Fig. 7. Axial T2 WI show medial to the left ovary a fluid collection in keeping with abscess originating from the ovary as nicely demonstrated in (b) (arrow).

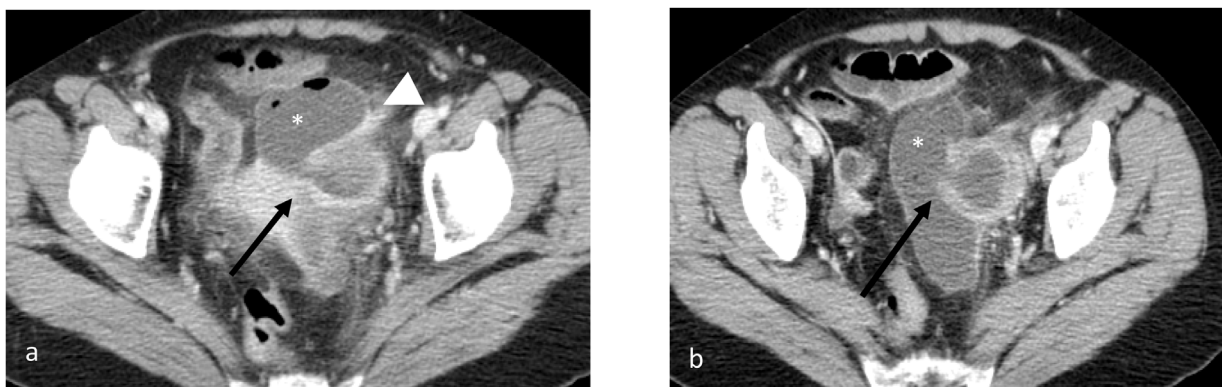


Fig. 8. Post contrast axial CT scan shows left adnexal abscess with small air bubbles inside (arrowhead). The abscess derives from the ipsilateral ovary as shown by the discontinuity of the ovarian stroma (long arrow).



Fig. 9. Post contrast axial CT scan shows hyperdense pig tail drain with resolution of the abscess. The left ovary is enlarged with small fluid collections inside.

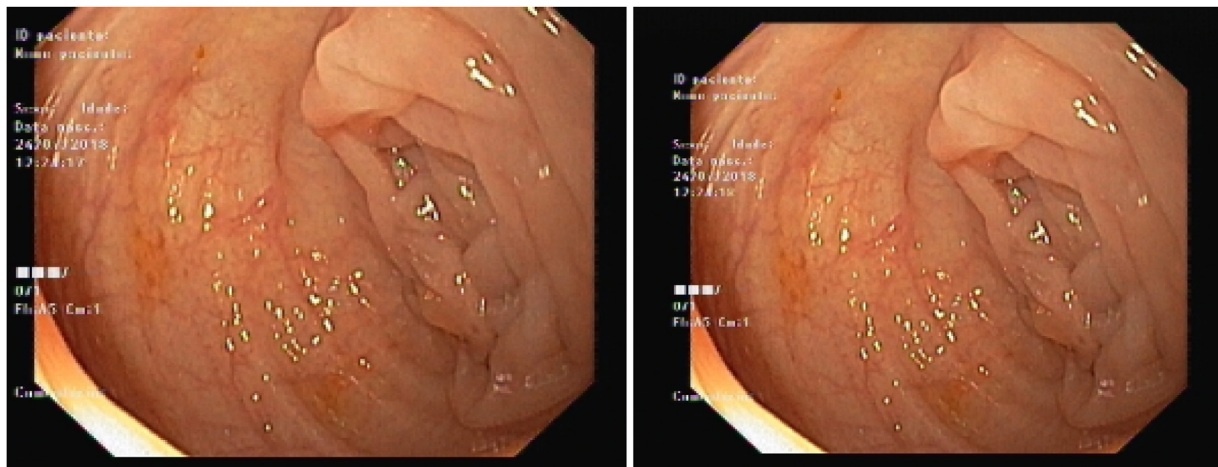


Fig. 10. Rectosigmoidoscopy showing edema of the colonic mucosa.

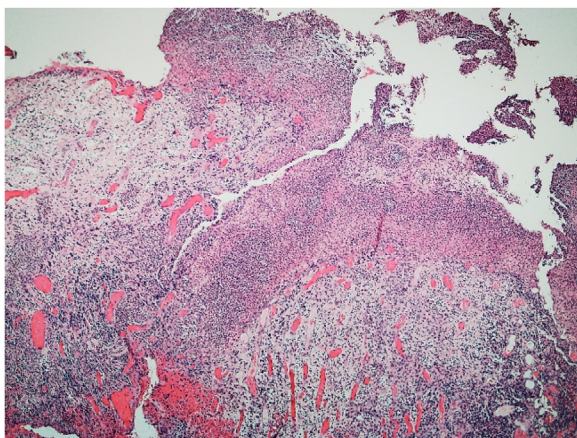


Fig. 11. (H&E): Fistula tract (at center), abscessed areas and intense inflammatory lesions of colonic mucosa (left).

Pathological assessment of the specimen showed an intense inflammatory process of sigmoid colon, with a fistula tract fistulized into the left ovary. The left ovary presented abscessed areas and foreign-body giant cell reaction (Figs. 11 and 12).

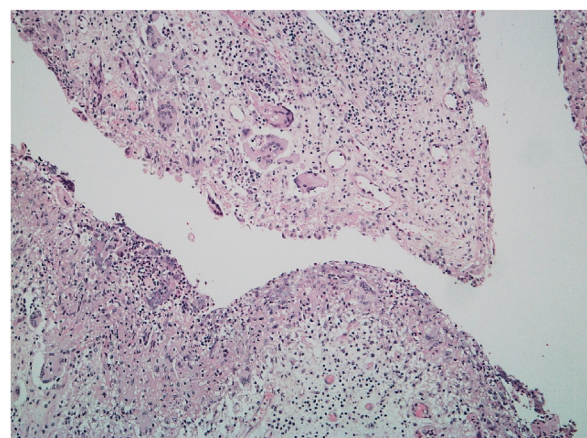


Fig. 12. (H&E): Foreign-body giant cell reaction (center) and abscessed areas on the left ovary.

3. Discussion

These two cases represent one of the rare complications of diverticular disease. The fistulization between colon and genital

Table 1
summarizes the main features of cases previously reported in the literature.

Article	Cases	Age	Symptoms	CT/MRI findings	Treatment
Williams SM; et al. (1999) [5]	1 (4)*	84	Pain; rectal bleeding	Diverticular disease but with no bowel-associated mass evident	Colotubal fistulous track curetted and anterior resection
Kalaitzis J, et al. (2010) [6]	1	87	Vaginal discharge; recurrent urinary tract infections	Large left ovarian cyst with an air-fluid level	Loop transverse colostomy and left salpingo-oophorectomy
Ruiz-Tovar J, et al. (2011) [9]	1	70	Pain	Sigmoid diverticulitis with left fallopian tube dilation and pneumosalpinx,	En bloc resection of the sigmoid colon and left ovary and fallopian tube, with end-to-end colorectal anastomosis
Riadh Bel, et al. (2011) [10]	1	36	Pain	Collection near sigmoid colon fistulized to left fallopian tube	Sigmoid resection with colorectal anastomosis
Fernández-García N, et al. (2011) [11]	1	80	Pain	Collection with air inside, adjacent to the uterus	Drainage only
Kumar S, et al. (2017) [2]	1	45	Pain	Linear air filled tubular structure with enhancing walls was noted adjacent to thickened sigmoid colon	Conservative management
Rosenzweig M, et al. (2017) [3]	1	54	Pain, vaginal discharge; recurrent urinary tract infections	Gas within the left ovary	Hand-assisted laparoscopic colon resection and left oophorectomy, with end-to-end colorectal anastomosis
Syllaios A, et al. (2018) [7]	1	51	Pain, vaginal discharge; bloody stools	Diverticula in the sigmoid colon and a fistula tract to the posterior wall of the vagina	Low anterior resection, fistulectomy and left salpingo-oophorectomy
Metz Y, et al. (2011) [12]	1	63	Pain	Left pelvic mass inseparable from the adjacent sigmoid colon	Pelvic mass together with adherent sigmoid colon was removed.
Stettler G, et al. (2014) [13]	1	75	Pain	Pericolonic stranding around the pelvic sigmoid colon with a fluid collection.	Sigmoidectomy and total abdominal hysterectomy with bilateral salpingo-oophorectomy
Naliboff JA, et al. (1996) [14]	1	73	Pain	Left adnexal mass	Left salpingo-oophorectomy and then, fecal diversion (due to pelvic abscess)
Mesia AF, et al. (2000) [15]	1	52	Vaginal bleeding	Diverticular abscess - right adnexal mass	Hysterectomy, bilateral salpingo-oophorectomy

* 4 cases referred at literature review in this article.

organs is common with bladder or vagina (mostly after hysterectomy), however, a communication with ovary or fallopian tube is rarely described. Other etiologies, such as primary neoplasms of ovary, ovarian abscess, pyogenic salpingitis or Crohn's disease are reported more frequently [2,5].

A literature review with mesh terms ((((((ovarian colonic) OR Colo-ovarian) OR Salpingocolonic) OR colosalpingeal) AND fistula)) AND diverticulitis revealed a total of 20 articles. After reviewing those articles, only nine satisfied the criteria of colosalpingeal or colo-ovarian due to acute diverticulitis and allowed a link for four extra case reports that were also included [12–15]. Table 1 resumes the main features of those cases. One article [8], with 8 cases of colo-ovarian fistula, was not included in the table, because it is mainly a review article of CT findings so the clinical data of each patient is not summarized.

Several articles refer the presence of genito-urinary symptoms, such as urinary infections or abnormal vaginal discharge [2,3,6,7]. In others, abdominal pain and fever are the main symptoms [2,8–11]. One of the studies, that described CT features suggesting adnexal involvement in the onset of diverticulitis, point the presence of collection with gas and liquid in the ovary as one of the most suggestive sign of communication between the two organs, which means, the presence of a fistulous tract [8].

In our report, the clinical symptoms pointed us to the diagnosis of acute diverticulitis, but the presence of fistula was suggested only by CT image. In both cases, no genito-urinary symptoms were present. In addition, colonoscopy, barium enema, fistulogram and MRI were also important exams for diagnosis and perioperative planning.

Due to the rarity of this complication, the treatment of these situations is not systematized in literature. The initial conserva-

tive treatment with antibiotics and percutaneous drainage of pelvic collections, if necessary, is reported [2]. However, in cases where conservative management fails, in the presence of persistence of symptoms or as a definitive treatment after acute treatment, surgical treatment is required. En Bloc resection of sigmoid colon and adnexal organs with primary end to end anastomosis or colostomy are the referred, being the primary anastomosis the procedure of choice [3,6,7,10]. Laparoscopic approach is also reported with advantages in postoperative recover [3,7].

These cases we report showed two different approaches to the same pathology. In the first case, the initial percutaneous drainage allowed the control of local infection and the surgery was performed electively with favorable local conditions to perform a primary anastomosis. On the other hand, in the second case the conservative treatment was not enough to control the symptoms, so the surgery was performed sooner. The local conditions in this second case, did not allow to perform an anastomosis and a Hartmann procedure was done. In both cases, the laparoscopic approach was done, allowing a faster postoperatively recovery.

This work has been reported in line with the SCARE 2018 criteria [16].

4. Conclusion

Colo-ovarian fistulas are rare entities, with few cases reported in literature. In this article, we present our experience in the management of two cases, with the same presentation but whose different response to conservative treatment lead to different surgical approach, both with favorable outcomes.

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor – in – Chief of this journal on request.

Author contribution

All authors had contributed for diagnose and treatment of the referred patients. The first draft of manuscript was written by Catarina Quintela and all authors commented on previous versions of the manuscript. All author read and approved the final manuscript.

Registration of research studies

NA.

Guarantor

I, Catarina Quintela, guarantee that the article “Colo-ovarian Fistula complicating acute diverticulitis: Two cases and literature review”, presented for the publication in the International Journal of Surgery Case Reports, was written by the author indicated, the material of the article is not and will not be submitted to other journal publications, the article does not contain statements that do not correspond to reality and all references used in are indicated.

Catarina Quintela accepts full responsibility for the work and the article publication.

Provenance and peer review

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