CASE REPORT

Caecal volvulus following abdominoplasty: a tale of caution

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SUMMARY

We present a case of a 30-year-old woman with a gangrenous right colon secondary to caecal volvulus, diagnosed postabdominoplasty. To our knowledge, this is the first case recorded in the literature. An emergency right hemicolectomy was performed and the patient had an unremarkable recovery. Given the severity of this incident, the diagnosis of caecal volvulus postabdominoplasty requires a high index of suspicion to allow prompt diagnosis and treatment.

BACKGROUND

Abdominoplasty is a type of cosmetic surgery that involves repair of recti divarication and excision of lax skin in the abdomen, to achieve a visually more toned abdomen. In the majority of cases, there are few complications, and patient satisfaction is high with one study of the National Health Service (NHS) revealing a 77% satisfaction rate.¹ Furthermore, evidence suggests a good safety profile when combining abdominoplasty with other procedures on the same day, including suction-assisted lipoplasty (liposuction),² breast and/or facial surgery³ and posterior vaginal repair.⁴

This case report highlights a major potential complication of abdominoplasty not previously recorded in the literature, which was caecal volvulus with gangrenous right colon. Caecal volvulus is a type of closed loop bowel obstruction, in which a mobile and displaced caecum rotates in the axial plane about a fixed point, with resultant strangulation affecting the terminal ileum, caecum, ascending colon and the associated mesentery.^{5–7} Given the morbidity and increased mortality rate associated with delayed diagnosis and treatment of caecal volvulus, clinicians should be extra cautious in patients with a history of abdominoplasty presenting with acute pain.

CASE PRESENTATION

The patient was a normally fit and healthy 30-year-old woman, with no significant medical or surgical history apart from three previous vaginal deliveries.

The patient had an excess of abdominal skin resulting from the three pregnancies, which had lowered her confidence and self-image. Therefore, she opted to have an abdominoplasty combined with labial reduction and vaginoplasty for cosmetic purposes. Two days later, she was transferred as an inpatient to our emergency department with severe colicky pain in the epigastrium and loins, which was associated with vomiting.

On examination, the abdomen was distended with tenderness and guarding in the right iliac fossa.

INVESTIGATIONS

Initial blood tests revealed a white cell count of $25.5 \times 10^9/L$ (range 3.5–12) and C reactive protein (CRP) 20 mg/L (range 0–5). An abdominal film showed multiple dilated loops of large and small bowel, with the caecum measuring approximately 9 cm in diameter. A nasogastric tube was inserted and intravenous fluids and antibiotics were started.

Repeat blood tests revealed an increase of the CRP to 186 mg/L. A contrast CT abdomen/pelvis revealed persistent caecal dilation, with the caecum lying low within the left hemipelvis (figure 1). There was a visible transition point within the mid transverse colon, and a significant volume of intra-abdominal free fluid. There was also small bowel dilation, likely due to incompetence of the ileocaecal valve.

DIFFERENTIAL DIAGNOSIS

Given the tenderness in the right iliac fossa, differentials included appendicitis, ovarian pathology such as ruptured ovarian cyst or ovarian torsion, and ischaemic bowel.

Figure 1 Contrast CT scan of the abdomen/pelvis in coronal section showing the caecal volvulus.

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Figure 2 Intraoperative image showing gangrenous caecum and ascending colon.

TREATMENT

An emergency laparotomy was carried out by reopening the extended Pfannenstiel incision, reflecting the skin flap superiorly and making a midline incision through the recti. A right hemicolectomy was performed for gangrenous caecum and ascending colon due to caecal volvulus (figure 2).

OUTCOME AND FOLLOW-UP

The patient had an unremarkable recovery (figure 3) and was discharged home on postoperative day 7.

DISCUSSION

Abdominoplasty, also known as ‘tummy tuck’, has become increasingly popular in the UK and the USA. Its cosmetic outcome is particularly appealing to patients who have recently lost a significant amount of weight such as bariatric patients or women postpartum, in whom an excess of lax skin often ensues within the central abdomen.⁸ Abdominoplasty involves a horizontal incision between the superior iliac spines (the extended Pfannenstiel incision), division of the rectus sheath, suturing the rectus muscles closer together and excising any excess skin. A neoumbilicus is constructed, and the residual ‘bikini line’ scar can be hidden beneath underwear. Early complications include seroma, haematoma, blood loss requiring transfusion, local infections, skin or fat necrosis, injury to the lateral cutaneous

Figure 3 Postoperative image of the abdomen. An emergency laparotomy was performed by reopening the Pfannenstiel incision. The neoumbilicus and previous drainage sites can also be seen in this image.

nerve of the thigh and delayed healing.^{9–11} Late complications include ‘dog ears’, localised fatty excess and unsatisfactory scars.¹¹ For the latter complications, almost a quarter of patients require revision surgery, which is a significant concern that should be part of the preoperative counselling that patients receive.¹¹ Despite the complications, the psychosocial effects postabdominoplasty have been positive in the majority of patients.^{12 13}

Caecal volvulus is a relatively uncommon cause of bowel obstruction.⁵ Delayed diagnosis results in vascular compromise and potentially fatal gangrenous bowel. It is the second most common large bowel volvulus after sigmoid colon.^{7 14} It is postulated that caecal volvulus occurs in individuals who have an inherently mobile caecum due to poor embryological attachment of the caecum and ascending colon to the posterior parietal peritoneum in the right paracolic gutter, in combination with risk factors such as chronic constipation, bowel adhesions or recent abdominal surgery.^{5–7} Although abdominoplasty has not previously been implicated, there have been other exclusive case reports of caecal volvulus occurring

- ▶ Postcaesarean section¹⁵;
- ▶ Postcolonoscopy¹⁶;
- ▶ Postlaparoscopic procedures —appendectomy,¹⁷ nephrectomy and renal transplant¹⁸ and liver biopsy.¹⁹

Our case differs from the above case reports because abdominoplasty does not involve opening of the peritoneal cavity. However, the caecal volvulus may have been triggered by reduction in the volume of the peritoneal cavity during repair and plication of the rectus muscles and tightened skin layer, which twisted an already mobile caecum that was displaced within the left hemipelvis. This could explain the short time lapse between the abdominoplasty and the acute presentation.

CONCLUSION

In conclusion, this case report of caecal volvulus postabdominoplasty is the first of its kind. Although the finding may be coincidental, we postulate that our patient had an inherently mobile and displaced caecum, which in combination with a reduction in volume of the peritoneal cavity during abdominoplasty resulted in caecal volvulus and bowel ischaemia. We performed the CT scan promptly following recognition of rising inflammatory markers and worsening abdominal pain, which resulted in early laparotomy and right hemicolectomy for caecal volvulus and ischaemic bowel.

Learning points

- ▶ Caecal volvulus occurs when a mobile caecum rotates about a fixed point following a trigger such as chronic constipation or recent abdominal surgery.
- ▶ The diagnosis of caecal volvulus and ischaemic bowel should be considered in patients postabdominoplasty presenting with unspecified abdominal pain.
- ▶ Prompt laparotomy is a life-saving measure that should be considered in the context of unresolving abdominal pain, rising inflammatory markers and a CT suspicious of caecal volvulus.

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Contributors SAZ performed the literature review and drafted the main writeup. AH made corrections to the initial writeup. HM helped with the hypothesis/explanation of the case findings. CB supervised the work and provided a structured explanation of the laparotomy and right hemicolectomy procedure. All authors contributed to the following essential criteria: substantial contributions to the conception or design of the work; or the acquisition, analysis or interpretation of data for the work; drafting the work or revising it critically for important intellectual content; final approval of the version to be published. All authors proof read the manuscript and contributed to the discussion section.

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