

## Case Report

# Giant solitary colonic diverticulum presenting as an abdominal mass: A case report

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Diverticular disease of the colon is a common disease in the Western population. Giant colonic diverticulum is a rare presentation of this disease. We report a case of a 38-year-old female suffering from chronic kidney disease, who presented with chronic constipation and meteorism progressively getting worse over a number of months. Pre-operative imaging revealed a solitary sigmoid mass which later turned out to be a giant diverticulum which was compressing her bladder and ureters. Bilateral ureteric stents were inserted and an anterior resection performed. Recovery of patient post-operatively was uneventful. Histopathology report confirmed a perforated inflamed giant diverticulum in the sigmoid colon. Pathophysiology of giant colonic diverticulum is discussed.

**Key words:** Sigmoid colon, diverticulum, giant.

## INTRODUCTION

Diverticular disease of the colon is a condition that involves the herniation of the mucosal and sub-mucosal layer through the intestinal wall and smooth muscle at points where the vasa recta enter the bowel wall. These out-pouchings typically occur in the large intestine, 90% of which in the sigmoid colon. A rare variant of colonic diverticular disease is the giant colonic diverticulum (GCD) first described by Bonvin and Bonte in 1946. This is defined as a colonic diverticulum greater than 4 cm in diameter and is usually associated with colonic diverticular disease (Sasi W et al., 2010). We report a patient with a perforated GCD and chronic kidney disease resulting from bilateral ureteric compression by the GCD.

## Case report

A 38-year-old Indonesian woman was admitted to the emergency department for constipation and a distended

abdomen. She was unable to pass stools, had significant bloating, but was able to pass flatus. Her symptoms started a few months previously and had deteriorated over the past week. She was nauseous but did not report any vomiting. Her co-morbidities included hypertension and chronic kidney disease. She had a negative family history for malignancy and was a non-smoker. She had had a hysterectomy 15 years previously for a non-malignant condition. Physical examination revealed a non-tender and distended abdomen. There was a large cystic mass arising from the suprapubic region extending above the umbilicus and this was reported by her to have been present for 5 years. At presentation her renal function was severely impaired with an estimated glomerular filtration rate of 9.9mL/min/1.73m<sup>2</sup>. She was also anaemic with haemoglobin count of 7.7g/dL. An investigative colonoscopy noted mild inflammation of the sigmoid colon with no evidence of any obvious diverticulae.

A Magnetic Resonance Imaging (MRI) scan revealed a 15x25x28cm complex cystic lesion in the patient's pelvis and lower abdomen which was compressing her bladder and ureters (Figures 1 & 2). The presence of gas within the lesion suggested a colonic origin rather than a gynaecological cause. Bilateral hydronephrosis and hydr-

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ureters were also visualised. The liver, spleen, pancreas and gallbladder appeared uninvolved.

The patient required pre-operative haemodialysis and transfusion of 3 units of packed red blood cells due to uraemia (26.6mmol/L) and anaemia respectively. Bilateral retrograde pyelogram with cystoscopy was performed and subsequently bilateral ureteric stents (JJ stents) inserted prior to the surgery in order to relieve ureteric obstruction. The patient underwent a laparotomy which revealed a giant colonic diverticulum adherent to the rectum, appendix, vaginal stump and bladder in the retro-peritoneum. This mass was mobilised together with the sigmoid colon, appendix, vaginal stump and part of the bladder, and subsequently resected *en-bloc*. The surrounding liver, gallbladder and remaining colon were normal. The distal transverse colon was mobilised and anastomosed to the rectum via primary anastomosis, using a Contour 40 (Ethicon Endosurgery) and DST 31 (Covidien). An appendectomy was performed. The bladder and vaginal stump were closed. A defunctioning loop ileostomy was created and placed in the patient's right iliac fossa.

Histopathological examination confirmed the mass to be the sigmoid colon attached to the vaginal stump on the external surface of the mass, as well as a congested appendicitis and right Fallopian tube. Many foci of suppuration and abscesses were noted within the mass. There was transmural perforation of the sigmoid colon due to a small ulceration leading to the growth of the cystic mass measuring 24cm in diameter. The diagnosis made was an inflamed giant colonic diverticulum which had perforated. No signs of malignancy were found within the mass, Fallopian tube, appendix or doughnut margins.

The patient had an uneventful post-op recovery. She was discharged on the 7<sup>th</sup> post-operative day, and her stoma was closed 2 months later. She remains well and asymptomatic.

## DISCUSSION

Giant colonic diverticulum (GCD) is regarded as a rare complication of pre-existing diverticular disease, when a diverticulum is equal or greater than 4 cm in diameter. In the literature, GCD sizes reported range from 4-9 cm, and very rarely above 25 cm in diameter (Sasi W et al., 2010). The first description of GCD was back in 1946 by Bovin and Bonte' and subsequent radiological report in 1953 by Hughes and Greene [Hughes WL, Greene RC, 1953]. Since the original description, there have been no more than 180 cases of GCD reported in literature (Sasi W et al., 2010), with approximately 90% of which are located in the sigmoid colon.

There are 3 types of GCD described under a 1988 classification system by (McNutt R et al., 1988; Guarnieri

A et al., 2009). The first type is a congenital diverticulum whereby the pouch consists of all layers of the colonic wall including the smooth muscles and it is a paediatric condition. The second type is a pseudo-diverticulum whereby the wall of the diverticular pouch is mainly mucosa and no muscle layer. This is the type of diverticulum usually found in colonic diverticular disease. Lastly, the inflammatory diverticulum is where the wall consists of reactive scar tissue made up of dense fibrous tissue, chronic inflammatory cells, and foreign body giant cells. It has been suggested that this composition may result from degeneration of the mucosal lining of a pseudodiverticulum secondary to perforation of mucosa and submucosa, leading to an abscess formation which communicates with the bowel lumen. This is probably the type of GCD in our patient. A more contemporary classification system in 1998 by Choong and Frizelle (Choong CK and Frizelle FA 1998) divides GCD into simply congenital true diverticulum, and acquired 'pseudo-diverticulum' that does not contain the muscle layer. The aetiology of GCD is not exactly understood, however a flap-valve mechanism has been used to explain the growth of the GCD. Higher pressures within the lumen of the colon cause higher pressures in a diverticulum via a one-way valve-like communication, leading it to 'grow' into a GCD (Sasi W et al., 2010).

These patients usually present with an abdominal mass, either suprapubic or left sided. Rarely, the GCD may present as an intermittent mass (Abdelrazeq AS, 2009). The duration of symptoms is variable and a palpable mass is usually present. The initial investigations should include a plain abdominal x-ray, colonoscopy and a CT of the abdomen. A plain x-ray of the abdomen may reveal the 'balloon sign' [Steenvoorde P, 2004] with or without an air fluid level. Whilst the colonoscopy rarely identifies the mass, it can help eliminate potential differential diagnoses. The differential diagnoses include colonic diverticulitis, paracolic inflammatory mass, colonic duplication cyst, colon cancer and colonic intussusceptions and an ovarian mass.

## Conclusion

The current gold standard for management of GCD is surgical resection of colonic segment involved or diverticulectomy (Sasi W et al., 2010; Choong CK and Frizelle FA) with the aim of alleviating symptoms and preventing recurrence.

## REFERENCES

- Abdelrazeq AS, Owais AE, Aldoori MI, Botterill ID (2009). A giant colonic diverticulum presenting as a 'phantom

- mass': a case report. *J. Med. Case Reports*, 3:29
- Bovin P, Bonte G (1946). Diverticules géant du sigmoid. *Arch Mal App Dig*;35:353–355.
- Choong CK and Frizelle FA (1998). Giant colonic diverticulum: report of four cases and review of the literature. *Dis Colon Rectum*;41:1178-1186
- Guarnieri A, Cesaretti A, Tirone A, Francioli N, Piccolomini A, Vuolo G, Verre L, Savelli V, Di Cosmo L, Carli AF (2009). Giant sigmoid diverticulum: A rare presentation of a common pathology. *Case Rep Gastroenterol*;3:5-9
- Hughes WL, Greene RC (1953). Solitary air cyst of peritoneal cavity. *AMA Arch Surg*.,67(6):931–936
- McNutt R, Schmitt D and Schulte W (1988). Giant colonic diverticula – three distinct entities. Report of a case. *Dis Colon Rectum*.,31:624-628
- Sasi W, Hamad I, Quinn A and Nasr AR (2010). Giant sigmoid diverticulum with coexisting metastatic rectal carcinoma: a case report. *J Med Case Reports*,4:324
- Steenvoorde P, Vogelaar FJ, Oskam J, Tollenaar R2004: Giant colonic diverticula. Review of diagnostic and therapeutic options. *Dig Surg*., 21:1-6.