Colorectal disorders during pregnancy: a review

The management of colorectal problems can be difficult during pregnancy. This review summarizes the treatment options available for these patients.

Colorectal pathologies can be relatively common during pregnancy. A review of 217 pregnant women (Unadkat et al, 2010) found that 27% had experienced at least one anorectal complaint during their pregnancy. This is often caused by the physiological changes that occur during pregnancy. The management of the pregnant patient can be difficult, because consideration must be given to fetal wellbeing. In some cases, the first-line treatment may no longer be appropriate and less successful options may have to be used. With benign disease, a strategy of symptom control rather than cure is often most appropriate. The symptoms may be distressing, especially in a young and previously well patient. It is important to provide reassurance that these problems often improve once the pregnancy is over.

In complicated cases imaging may become necessary. Surgical intervention should only be considered in the most extreme cases. It is estimated that 0.2–1% of pregnant women may undergo non-obstetric surgery (Parangi et al, 2007). This review provides an overview of the management of some of the colorectal conditions which may be encountered during pregnancy.

Method

A search of the Pubmed and Medline electronic databases was performed. MeSH keywords used were 'pregnancy', 'anal fissure', 'haemorrhoids', 'constipation', 'prolapse', 'incontinence', 'endoscopy', 'crohn's', 'colitis', 'colorectal cancer' and 'post-natal'. Studies which reported the treatment of these conditions during pregnancy were reviewed by the authors and included if relevant.

Investigations

Simple outpatient investigations such as proctoscopy and rigid sigmoidoscopy may be adequate to diagnose the underlying problem. However, symptoms such as diarrhoea and rectal bleeding may require investigation of the proximal lower gastrointestinal tract. Rectal bleeding during pregnancy is likely to be nearly always caused by haemorrhoids (Unadkat et al, 2010), but more serious causes should also be considered. These may include inflammatory bowel disease and colorectal cancer. Stool cultures should be taken to exclude an infective cause.

Lower gastrointestinal endoscopy should be reserved for pregnant patients who do not settle with simple conservative measures, when the diagnosis is uncertain or when delay may adversely affect the outcome of the pregnancy. An experienced endoscopist should perform any lower gastrointestinal endoscopy with full informed consent. In most situations flexible sigmoidoscopy is safe and often adequate to diagnose and assess the patient. There is no evidence that it causes harm to the fetus (Siddiqui and Denise Proctor, 2006).

As is the case in non-pregnant patients, endoscopy becomes more risky in the presence of severe disease, such as fulminant colitis. However, the risk of the procedure must be balanced against the importance of accurate diagnosis. Colonoscopy is rarely needed and its effects upon the outcome of the pregnancy are less certain. It is likely to be most safe during the second trimester, once the pregnancy is established and the uterus is not very enlarged (Cappell, 2011).

The endoscopy may require the patient to be positioned in such a way that caval compression by the gravid uterus may occur. This may lead to reduced uterine blood flow and fetal hypoxia. The anaesthetic drugs used during colonoscopy may be directly harmful to the fetus. Midazolam may be used, but with caution (Cappell, 2011). Alternatives such as inhaled entonox may be useful. Dehydration and electrolyte imbalance may result from excessive use of bowel cleansing drugs. Rectal phosphate can be used safely during pregnancy, but this may only prepare the left colon. However, oral cleansing preparations such as macrogols, magnesium citrate and phosphates must be used with caution (Joint Formulary Committee, 2012).

If the clinician suspects occult anal sepsis or fistula in ano, then endoanal ultrasonography and magnetic resonance imaging may be used. These avoid the risk to pregnancy of an examination under anaesthesia.

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Specific conditions and their management

Anal fissure

The majority of anal fissures are believed to be caused by a hypertonic internal anal sphincter, which can impair blood flow within the mucosa of the low anal canal (Altomare et al, 2011). When a tear is sustained, it will often fail to heal. The patient will experience anal pain and rectal bleeding. Healing may typically occur when the stools are softer and the sphincter tone has reduced.

The incidence of anal fissure appears to be higher in the period post partum, increasing from 1% in the final trimester to 15% in the first 2 months after delivery (Abramowitz et al, 2002). The reasons for this are uncertain. This may be a result of the trauma that occurs to the perineum and anus during delivery, with subsequent ischaemia of the anal mucosa. This is supported by the work of Corby and colleagues (1997) who found a 9% incidence of anal fissure in post-partum patients, reporting a significant reduction in anal canal resting and squeeze pressures after delivery. This suggests that postnatal anal fissure may not occur as a result of a hypertonic sphincter. A traumatic delivery may increase the risk of fissure development, but interestingly caesarean section does not appear to be protective (Abramowitz et al, 2002). The majority of post-partum fissures are anterior, and there may often be an underlying occult sphincter injury (Jenkins et al, 2008). In such patients, surgical intervention, such as lateral internal sphincterotomy (Eisenhammer, 1951), should be avoided as this carries an increased risk of subsequent incontinence.

A significant proportion of anal fissures will heal without treatment (Tanner, 2004). However, if this does not happen, they may be difficult to treat during pregnancy. Stool softeners may be used and dietary advice given so that constipation is avoided. Glyceryl trinitrate topical preparations (Watson et al, 1996) may be used, but they can cause headaches which may make them poorly tolerated. Diltiazem (Knight et al, 2001) and botulinum toxin A (Jost, 1997) can be used with caution during pregnancy, and are relatively contraindicated during breast feeding (Joint Formulary Committee, 2012).

Haemorrhoids

Haemorrhoidal cushions are fibro-vascular structures in the low anal canal which are supported by a framework of connective tissue (Acheson and Scholefield, 2008). They have a role in maintaining continence (Loder et al, 1994) and contribute up to 15% of anal resting pressure (Lestar et al, 1989). Haemorrhoids are dilated vascular cushions. Up to 50% of middle-aged people in the western world are affected by these (Hyams and Philpot, 1970). They are more prevalent in pregnancy (Medich and Fazio, 1995), and are the most common anorectal pathology seen during this period and the puerperium. The precise incidence is uncertain. A number of small studies have attempted to estimate the incidence of symptomatic disease. It has been reported in up to 7% of women by the third trimester. Most symptomatic disease will occur in the second and third trimesters (Gojnic et al, 2005). The incidence can increase to 35% in the early puerperium (Abramowitz et al, 2002). By 6 months after delivery most symptoms will subside (Avsar and Keskin, 2010).

Several factors are implicated in the increased incidence of haemorrhoidal disease during pregnancy. These include the increased prevalence of constipation (Derbyshire et al, 2007), the obstructive effect of the gravid uterus on pelvic venous return and the increase in circulating blood volume, which can be as high as 25–40%. Hormonal changes affect smooth muscle tone, which can decrease venous muscle tone and increase pelvic floor laxity. These in turn may alter the normal function of the haemorrhoidal cushions. Obstetric trauma is an important risk factor for haemorrhoidal disease in the postnatal period. Caesarean section appears to protect against this (Abramowitz et al, 2002). Associated perinatal factors include a long second stage of labour, forceps use, large babies and obstetric tears (Abramowitz and Batallan, 2003). Late delivery appears to increase the incidence of postnatal haemorrhoidal disease, which may be caused by the prolonged exposure of the perineum to the effects of a gravid uterus (Abramowitz et al, 2002).

Haemorrhoids usually become symptomatic because of mucus leakage, prolapse and bleeding. Common symptoms are perianal discomfort, pruritus ani and intermittent minor rectal bleeding. In some cases prolapsed haemorrhoids may become incarcerated and thrombose. In these cases, the patient will present with acute pain and perianal swelling. The incidence of thrombosed external haemorrhoid peaks at 20% within the first day after delivery (Abramowitz et al, 2002).

Management of symptomatic haemorrhoids in pregnancy should be conservative and aimed at symptom control. Associated symptoms of constipation should be addressed, patients should be advised to avoid straining at defecation and to increase fluid and fibre intake (Quijano and Abalos, 2005). Laxatives are beneficial in this regard, particularly bulk-forming laxatives followed by stimulants (Alonso-Coello et al, 2006). Oral analgesia such as paracetamol may be safely used. Non-steroidal anti-inflammatory drugs should be avoided during pregnancy, and especially during the final trimester, because of the risk of closure of the fetal ductus arteriosus in utero. They can be used with caution if the woman wishes to breast feed in the postnatal period (Joint Formulary Committee, 2012). Thrombosed haemorrhoids should be treated with ice packs, topical local anaesthetic preparations and oral analgesia.

Two randomized controlled studies have investigated the effect of oral rutosides (Wijayanegara et al, 1992; Titapant et al, 2001) in 150 women, and found them to be effective for up to 4 weeks. However, a Cochrane review (Quijano and Abalos, 2005) advised there are insufficient safety data to support their routine use.

Topical therapies that contain local anaesthetics and corticosteroid preparations can safely be used during pregnancy (Vazquez, 2010), although their efficacy during this period has not been demonstrated. Products that contain epinephrine and phenylephrine should be used with caution.

Minor surgical procedures such as rubber band ligation (Iyer et al, 2004) and injection sclerotherapy may be considered. The outcome of rubber band ligation or injection sclerotherapy during pregnancy has not been reported. It is the authors' opinion that, of these, rubber band ligation may be used, but with caution. Infrared coagulation can be used for internal haemorrhoids, and is theoretically safe in pregnant women (Wald, 2003). More invasive treatments such as haemorrhoidectomy, stapled haemorrhoidopexy (Longo, 1998) and haemorrhoidal artery ligation should be reserved for symptomatic disease that remains after pregnancy. Haemorrhoidectomy has been reported during pregnancy in exceptional circumstances, such as life-threatening haemorrhage or for necrotic thrombosed disease. It can be performed under local or regional anaesthesia (Saleeby et al, 1991).

Rectal prolapse

Rectal prolapse, or procidentia, can be defined as descent of the rectum beyond the anus (Karulf et al, 2001). Rectal prolapse during pregnancy is very rare, there having been two case reports. Prolapse during pregnancy may be a result of the increase in intra-abdominal pressure and of changes in the pelvic floor, caused by progesterone during pregnancy (Quigley, 2007). Of note, there may also be a concurrent history of pelvic floor dysfunction and constipation.

Operative intervention should be avoided during pregnancy. The clinician should aim to control the symptoms associated with the prolapse. Patients should avoid straining at stool and laxatives may be used. If leakage occurs, the patient can be advised to wear pads. Should the prolapse become incarcerated, then every effort should be made to reduce it using conservative treatment. Ice packs, pressure and even sugar can be used to reduce the tissue oedema and aid reduction (Myers and Rothenberger, 1991). If this fails, reduction can be performed under general anaesthetic. Surgery is only indicated when the prolapse becomes irreducible. In this event, a perineal approach should be undertaken.

Constipation

Constipation is common during pregnancy – up to 40% of women may be affected (Derbyshire et al, 2007). Various factors contribute to this. The increased level of progesterone during pregnancy affects gastrointestinal smooth muscle, and the musculature and supporting tissues of the pelvic floor. This may adversely affect colonic transit and the evacuatory function of the lower gastrointestinal tract. The mechanical effect that a gravid uterus has upon the pelvic floor and abdominal wall muscles will also contribute. The decrease in physical activity that occurs during pregnancy may also have an effect. Of these, it is likely that the hormonal changes have the greatest impact (Baron et al, 1993). Multiparity and prenatal constipation are both risk factors (Marshall et al, 1998) for the development of constipation during pregnancy. The prevalence of constipation is highest in the first two trimesters, and declines in the third trimester and puerperium. This is likely to reflect the greater effect of hormonal changes over the mechanical effect of the gravid uterus (Derbyshire et al, 2007). The symptoms are those of suggestive of slow colonic transit and evacuatory dysfunction. They usually subside by 6 months after delivery. Other anorectal disorders such as haemorrhoids and anal fissures may co-exist with constipation.

There is very little in the published literature that has reported on the treatment of constipation during pregancy. A Cochrane review in 2001 found only two studies of relevance, and concluded that treatment should commence with fibre supplements followed by stimulant laxatives if the former fails (Jewell and Young, 2001). The British National Formulary (Joint Formulary Committee, 2012) suggests that bulk-forming laxatives such as ispaghula husk, osmotic laxatives such as lactulose and stimulants such as bisacodyl and senna may be used safely.

Faecal incontinence

Faecal incontinence may be defined as the involuntary loss of liquid or solid stool. Faecal incontinence is more usually seen as a complication of vaginal delivery, but has also been reported during pregnancy. A questionnaire study of 487 pregnant women reported an incidence of faecal incontinence of 3.9% and of flatus incontinence of 40%. Previous obstetric injury increased the incidence of these symptoms (van Brummen et al, 2006). A questionnaire study of 75 antenatal women found an incidence of faecal incontinence of 30%, which fell to 13% in the postpartum period (O'Boyle et al, 2008). These findings may be the result of the effect of increased levels of relaxin and progesterone upon the anal sphincters and pelvic floor (MacLennan et al, 2000). The risk of faecal and urinary incontinence is increased in the older patient (McKinnie et al, 2005) and may be worse in those with pre-existing dysfunction.

When severe, faecal incontinence can be difficult to manage. Loperamide should be used with caution during pregnancy (Joint Formulary Committee, 2012). Pads and biofeedback may be offered to these patients. The effect of neuromodulation during pregnancy is uncertain and it should not be used (El-Khawand et al, 2012). A Cochrane review suggested that antenatal pelvic floor muscle training may reduce the incidence of, and be an effective treatment, for postnatal urinary incontinence (Boyle et al, 2012). It is likely that this also applies to faecal incontinence. The management of post-partum faecal incontinence is beyond the scope of this article and has not been addressed.

Colorectal cancer

Cancer during pregnancy is uncommon, with an incidence of one to two cases per 1000 (Moran et al, 2007). Colorectal cancer during pregnancy is rare – believed to occur in 0.002% of pregnancies (Dahling et al, 2009). The choice of treatment may depend upon the stage of pregnancy and the patient's desire to keep the pregnancy. A judicious individualized treatment strategy needs to be formulated, and careful counselling should be undertaken with the patient. Early input from the obstetricians and neonatologists is necessary. The management of colorectal cancer during pregnancy is often complicated by a delay in presentation, difficulty in staging and the timing of surgical intervention on a pregnant abdomen.

There is little high grade evidence for the treatment of colorectal cancer during pregnancy. Most of the published literature is case reports. Bernstein and colleagues (1993) reported on 41 pregnant women with colorectal cancer. The median age at presentation was 31 years (range 16–41 years). The distribution of tumours, according to the Dukes classification, was A=0, B=16, C=17 and D=6, 64% of which occurred in the rectum. When they combined these data with those in the reported literature, they found 177 (86%) of 205 colorectal cancers were rectal. This preponderance of rectal tumours is at odds with the incidence seen in the general population. When compared to the general population, the pregnant group had a poorer prognosis. This is probably explained by the more advanced stage of the presenting tumour; overall, 62% had presented with a Dukes stage C or D. The more advanced stage may be explained, in part, by a delay in presentation. Up to 28 and 40% of colorectal tumours have been found to express oestrogen and progesterone receptors respectively (Bracali et al, 1988). Because of this, some authors have speculated that the higher levels of oestrogen and progesterone observed during pregnancy may be responsible for the poorer prognosis (Xu and Thomas, 1994; Korenaga et al, 1997). There are increased levels of various growth factors during pregnancy, such as insulin-like growth factor. Insulin-like growth factor is believed to increase the synthesis of vascular endothelial growth factor, an angiogenic growth factor which supports tumour growth (Giovannucci, 2001).

The timing of any abdominal or pelvic surgery needs careful consideration. The risk of perioperative fetal loss is highest during the first trimester. A miscarriage risk of 8–11% has been quoted, but the evidence for this is poor (Brodsky et al, 1980). This is also complicated by a background miscarriage rate of 15% during early pregnancy (Moran et al, 2007). From a technical point of view, surgery is easier to perform when the uterus is small. A large gravid uterus may make access to the pelvis impossible, and may make a laparoscopic approach impossible. However, a significant delay may carry the risk of disease progression. Moran and colleagues (2007) have suggested that surgical resection of the tumour may be performed within the first 20 weeks of pregnancy. If the tumour presents after 20 weeks, then postponing treatment until after delivery can be considered. Fetal lung maturation may be accelerated by the use of corticosteroids, which can allow delivery to be performed safely at 28–32 weeks. In these cases, it is unclear whether delivery should occur vaginally or by caesarean section. It is possible that a bulky rectal tumour may preclude a successful vaginal delivery. Resection of the cancer may then be performed immediately, or after a few weeks. A delay will allow the uterus to involute, and the increased pelvic vascularity to subside. When a tumour presents with obstruction during the latter half of the pregnancy, a defunctioning colostomy may be performed, or a colonic stent may be used (Healey et al, 2011).

Radiotherapy is contraindicated during pregnancy, and so is not available as a neoadjuvant therapy. It is uncertain how this may affect the risk of local recurrence. Chemotherapy can be used in the second and third trimesters (Cardonick et al, 2010) with careful maternal and fetal surveillance. However, it cannot be used during the first trimester because of the increased susceptibility of the fetus to cytoxins during this period (Williams and Schilsky, 2000). Typically 5-fluorouracil may be offered to these patients, and is thought to be the safest suitable agent (Jeppesen and Osterlind, 2011).

Inflammatory bowel disease

Inflammatory bowel disease may present or flare up during pregnancy. In some patients disease activity will subside during pregnancy. The management of inflammatory bowel disease during pregnancy should be as conservative as possible. However, the basic principle should be to control disease activity and to protect the fetus. There is an increased risk of miscarriage, premature birth, congenital abnormality and low birth weight in those with active disease when compared to control (Cornish et al, 2007). As stated earlier, flexible sigmoidoscopy is a safe procedure in pregnancy, and can be performed either with or without an enema preparation. This will often give accurate diagnosis information and assessment of disease. This procedure should be performed by an experienced endoscopist. Proctitis can be safely treated with aminosalicylic acid suppositories. More proximal disease can be treated with aminosalicylic acid enemas or oral aminosalicylic acid preparations (Joint Formulary Committee, 2012).

In the case of advanced disease, it is important that help is sought from a specialist inflammatory bowel disease physician. Corticosteroids, budesonide, thiopurines and anti-tumour necrosis factor alpha therapy may be safely used during pregnancy. Methotrexate is contraindicated because of its reported teratogenic effects (Caprilli et al, 2006). The implications of exposure to anti-tumour necrosis factor therapy on the newborn are unknown. Patients and physicians should be aware of in utero exposure and treatment may best be avoided in the last trimes-

ter of pregnancy in order to prevent circulating anti-tumour necrosis factor antibodies in the neonate, because IgG1 antibodies cross the placenta barrier in late second and third trimesters. Patients and partners need to be fully informed about potential risks (Van Assche et al, 2013). The indications for emergency surgery are the same as those for non-pregnant patients. The outcome of emergency surgery in these patients is poorly reported in the literature. Although the operation and anaesthetic will present some risk to the fetus, the greatest threat will come from the underlying disease (Caprilli et al, 2006).

Conclusions

The evidence base for the treatment of many of these conditions during pregnancy is small. Many of the benign conditions will subside once pregnancy is over. Reassurance and symptom control are usually all that are needed. The distress that many of these conditions can cause should be acknowledged. A multidisciplinary approach may be needed, in which obstetricians and midwives are involved. Surgical intervention should be reserved for those with severe disease. **BJHM**

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KEY POINTS

- Colorectal pathology may be common during pregnancy.
- Most are benign diseases which will settle once the pregnancy is over.
- Surgical intervention is rarely warranted.
- The management of more significant disease such as inflammatory bowel disease and cancer requires a multidisciplinary approach with input from gastroenterologists, obstetricians and oncologists as required.

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