Hemorrhoids are varicose veins of the rectum that are located in or near the anal canal and are covered by mucosa. They can occur at any age, are generally symptomless, and affect both sexes equally. Hemorrhoids are a common complaint among younger women and are more likely to occur during pregnancy and the menstrual cycle. In this article, we discuss the many approaches in the treatment of hemorrhoids. Laxatives, stool softeners, and fiber supplements are all considered safe for use by pregnant women. Moderate use of laxatives is also acceptable. Since there is a lack of sufficient evidence to support the safety and efficiency of topical medicines or oral phlebotomies during pregnancy, these treatments must be utilized with an increased degree of extreme caution. In the case that considerable bleeding occurs, anal packing may be a straightforward and helpful operation to implement. A hemorhoidectomy is the treatment option for hemorrhoids that have become strangulated, badly thrombosed, or have bleeding that cannot be controlled.

Introduction

One of the most common disorders that can affect the anorectum is hemorrhoidal disease. Anal bleeding, the sense of a prolapsing lesion, anal pain, anal irritation, and anal soiling are not symptoms that are unique to hemorrhoidal disease; however, these symptoms can occasionally be helpful in distinguishing hemorrhoidal disease from other disorders [1,2]. In actual clinical practice, classification of hemorrhoids was done based on the extent of internal hemorrhoidal tissue prolapse, and treatment was outlined in accordance with classical classification [3]. According to some findings, classification systems that take into account many symptoms at once are more practical [4,5]. The treatment for hemorrhoid was determined according to the severity of the symptoms, which might range from conservative management to intervention or surgical treatment [6–9]. Nevertheless, the therapy of hemorrhoidal disease in unusual conditions is considerably more challenging.

Incidence or Pathogenesis of Hemorrhoidal Disease in Pregnancy

Hemorrhoidal disease is often symptomatic and bothersome for pregnant women. It affects 25–35 percent of pregnant women [10], primarily presents in the third trimester, and can be
internal or external. There is a rise in blood volume (between 40% and 50% of the volume before pregnancy). During pregnancy, there is an increase in cardiac output and utero-placental blood flow, as well as an increase in the inflow and intravenous pressure in the pelvic veins [11,12]. These mechanisms result in increased blood flow in collateral circulation veins (vulvar, rectal, and lumbar), which increases the likelihood of developing hemorrhoids. The pelvic veins are compressed during pregnancy due to the enlarged uterus [13]. In the first trimester of pregnancy, an increase in venous pressure mixed with hormonal changes causes venous relaxation. Several mediators were associated with these alterations. Estrogens are responsible for mesenchymal release, but progesterone has a myolytic action across the body. These effects on the vein system result in a tissue vascular dislocation (estrogen) and a decrease in venous tone (progesterone) [13,14].

As a result of altered venous drainage through the hemorrhoid plexus, some circumstances (such as constipation and prolonged exertion) may contribute to the development of hemorrhoids by increasing intra-abdominal pressure [15]. Some dietary and lifestyle factors, including as a diet low in fiber, spicy foods, and alcohol consumption, may contribute to the development of hemorrhoids and the exacerbation of symptoms [16].

The most common manifestation of hemorrhoidal pathology is painless rectal bleeding during feces, with or without anal tissue protrusion. Anal pain may be experienced by patients with complex hemorrhoids, such as external hemorrhoids with thrombosis or internal imprisoned hemorrhoids. On clinical examination, a nodule at the level of the anal margin may be identified. It is uncommon for patients with simple hemorrhoids to experience anal pain. Anal pain with hemorrhoids is more likely to be caused by an anal fissure or an anal abscess [17].

Conservative Treatment

The purpose of hemorrhoid treatment in pregnant women is to control the symptoms, which typically disappear on their own during the postpartum period, and to protect the perineal region, which is susceptible to stress during vaginal delivery. Except in cases of acute thrombosis, a conservative approach is always suggested. If possible, surgical procedures should be delayed until a few weeks after delivery. It would be advantageous to avoid potential complications associated with hemorrhoidectomy [18,19].

The consumption of fiber and fluids positively affects constipation, which is one of the elements that contribute to the development of uterine fibroids during pregnancy. Constipation is a risk factor for long-term pelvic organ prolapse when combined with changes in anal sphincter pressure [20,21]. It is important to consume fresh fruits and vegetables on a regular basis [22]. In a study of 40 pregnant women in their third trimester, those who consumed 10 grams of fiber in the form of biscuits or wheat bran had significantly greater digestive motility than the control group [23].

Moderate physical activity increases intestinal motility and promotes anorectal coordination, and should be included among the prenatal hygiene interventions. The usage of Psyllium in the treatment of constipation has been linked to enhanced intestinal transit and intestinal motility, as well as the generation of soft, highly-lubricated stool [24].

Osmotic laxatives contain ions or molecules that are not reabsorbable and that hold water in the intestinal lumen. Polyethylene glycol and lactulose are the most widely utilized. According to the meta-analysis, polyethylene glycol is more efficient than lactulose in terms of stool frequency and consistency, with fewer adverse effects; osmotic laxatives should be considered
the first choice [25]. In addition, the favorable safety and tolerability profile enables their use in unique circumstances, such as pregnancy. The safety of stimulant laxatives during pregnancy is not currently recommended because there are insufficient evidences of their safety profiles. Sitz-baths diminish the tone of the internal sphincter, alleviate venous congestion, edema, and inflammation, and provide excellent symptomatic control for inflamed hemorrhoids [26]. A study of two groups of patients with acute anal pain due to hemorrhagic disease or anal fissure (24 patients in total, 12 for each group) who had used cold water [group 1, 10.8°C (range 5–13)] and hot water [group 2, 38.5°C (range 20–40)] did not reveal any differences in the clinical course of the disease, despite a reduction in painful symptoms with the use of hot water [27]. Because ice has a local anesthetic effect, applying it directly to an injury can make it feel less painful [28]. The analgesic effect of cold was achieved by decreasing cellular metabolism and sensory nerve transmission, which led to sphincter relaxation. Additionally, local vasoconstriction helped diminish edema and swelling of the tissue, which contributed to the analgesic effect of cold.

**Medical Treatment**

The goal of the medical treatment for hemorrhoids that occur during pregnancy is to alleviate the symptoms, however the therapeutic options are restricted. Anti-inflammatory medications are frequently taken in order to acquire a rapid regression of the symptoms; nevertheless, the usage of these medications is associated with the risk of developing problems. Corticosteroids and non-steroidal anti-inflammatory medications are the most often used anti-inflammatory drugs, however they cannot be used during or after nursing. There are insufficient scientific studies to demonstrate the safety and efficacy of steroidal anti-inflammatory medicines, whether they are administered orally, topically, or with suppositories [10]. Long-term topical steroid usage is connected with the development of allergic reactions and sensitization. Multiple investigations have indicated that the teratogenic effect of oral corticosteroids is dose-dependent, and four case-control studies have demonstrated an association between corticosteroids use and the development of cleft palate [29].

inhaled corticosteroids were observed to be connected with a modest increase in the risk of spontaneous abortion during pregnancy. On the other hand, oral corticosteroids were not related to an increase in the risk of congenital abnormalities [30]. Because breastfeeding makes it unsafe to use nonsteroidal anti-inflammatory drugs, it was recommended that pregnant women with thrombotic hemorrhoids and significant edema before and after delivery use corticosteroids at a dose of 40 mg per day for three to five days. Although betamethasone is the most often used corticosteroid in clinical practice, dexamethasone exhibited similar efficacy [31]. However, the prenatal exposure to dexamethasone was observed to increase the chance of neurological changes when compared to betamethasone and placebo [32].

Paracetamol, also known as acetaminophen and N-acetyl-p-aminophenol, can be recommended to alleviate uncomfortable sensations at the typical dose; nevertheless, recent research has indicated its relation with fetal development problems [33]. It is not recommended to use codeine while breastfeeding and is only safe to take during the first and second trimesters of pregnancy for a limited amount of time. Treatment with tramadol is only permitted in the second trimester of pregnancy [34]. The application of topical anesthetics such as benzocaine, dibucaine, and pramoxine after each defecation can alleviate anal itching and discomfort, with possible sensitization following prolonged use [22].

For the treatment of hemorrhagic diseases, phlebotonic drugs are commonly prescribed.
Phlebotonics function as antioxidants, exert a protective effect against pro-inflammatory mediators, and enhance venous tone and lymph drainage. Flavonoids have been shown to be effective in the treatment of hemorrhoids in pregnant women, and it has been shown to decrease symptoms such as bleeding, itching, and recurrence of hemorrhoid [35]. Micronized pure flavonoid fraction has demonstrated efficacy in lowering pain and bleeding in patients with acute hemorrhoidal episodes, in addition to tolerability [36]. Rutosides belong to the family of flavonoids, which are plant-derived natural compounds. These are recommended drugs for treating chronic venous insufficiency. Although their mechanism of action is not well understood, the phlebotonic effect (the action of boosting venous tone) may be associated with an increase in lymphatic drainage (drawing of lymphatic fluids), an improvement in venous tone, and a decrease in capillary hyper permeability (the passage of substances through the membrane of the smallest vessels).

In patients with pregnancy-related grade I–III hemorrhoids, rutoside, a flavonoid glycoside, showed considerable improvement in pain alleviating, in comparison to placebo [37]. The symptoms of nausea, dizziness, gastrointestinal pain, vomiting, dry mouth, constipation, headache, and fatigue were the ones that were reported as occurring the most frequently in patients who experienced adverse reactions. Compared to placebo, there were no significant differences in adverse reactions, fetal death, early delivery, or congenital abnormalities. Nonetheless, several researches discovered a link between Rutoside and congenital abnormality and advised against its use during the first trimester of pregnancy [38,39]. There were no adverse effects recorded in terms of issues with prenatal development, birth weight, or postnatal nutrition in connection with the usage of 500 mg of Dafilon [22]. It was recommended that micronized diamines (Dafilon) be administered at a dose of 1–2 g/day for short periods only, and not for prolonged use [34]. Lacroix et al. [40] reported the first epidemiological data about suspected veinotonic side effects in pregnant women. They discovered no higher risk of unfavorable pregnancy outcomes in women exposed to veinotronics compared to those who were not exposed. According to a double-blind, randomized, controlled trial, weakened calcium, a phlebotonic medication with anti-haemodynamic action, is helpful in treating the acute phase of hemorrhoids, with a marked reduction in inflammation [41]. Dobesilated calcium (calcium 2,5-dihydroxybenzenesulfonate) inhibits, dose-dependently, the production of PGF1a, PGF2a, PGE2, and TXB2 [42]. Calcium Dobesilate impacts blood pressure and, as a result, reduces the need for medication and hospitalization in cases of mild to moderate midtrimester hypertension, according to a pilot research [43]. There have not been enough research done to determine the safety profile or the teratogenicity of the weakened calcium when it is consumed during pregnancy.

Interventional and Surgical Treatment

The treatment of hemorrhoids during pregnancy should be conservative, consisting of improving eating habits and using suppositories or ointments as necessary. Sclerotherapy, which involves injecting sclerosing chemicals at the level of the hemorrhagic plexus, is a controversial operation that can be performed during pregnancy. In the majority of instances, hemorrhoids disappear on their own within two months of delivery, along with the regression of risk factors that contributed to their development [44,45]. In the event of severe bleeding and pain that does not respond to any of the available analgesics, invasive procedures can be considered medically necessary during pregnancy. Thrombosis of the caudal hemorrhoid cushion is what causes hemorrhoids to protrude along the anal border and the anal canal. This condition is known as hemorrhoids thrombosis. Pain that comes on suddenly and swelling at the level of the.
anal edge are both symptoms of hemorrhoid thrombosis. The diagnosis can be easily confirmed by an examination of the perianal region. Surgery is typically not indicated for patients who have inadequate symptoms in their condition. The aim of the treatment is to lessen the patient’s level of discomfort by way of a systemic anti-inflammatory approach utilizing non-steroidal anti-inflammatory medicines. Ibuprofen and Diclofenac can be taken throughout pregnancy up until the 30th week of the pregnancy. It was previously thought that paracetamol could be taken throughout the entirety of a woman’s pregnancy; however, growing evidence from both experimental and epidemiological research suggests that prenatal exposure to paracetamol may alter fetal development, which may in turn increase the risk of certain neurodevelopmental, reproductive, and urogenital disorders. Caution is therefore required when using this medication during pregnancy [33]. Anesthetic ointments, such as Procain, Bupivacain, Lidovain, and Mepivacain, as well as local cooling, may be used in conjunction with the systemic treatment. With this conservative treatment, the pain should go away in a few days, and although the nodule will remain, it should go away on its own in two to four weeks [46]. Necrosis of the vascular wall and skin can, in extremely rare instances, be linked with spontaneous resolution of the thrombus, which in turn leads to relief of the symptoms. In urgent circumstances, due to the severe pain and the presence of a large thrombus, local anesthesia is used for surgical treatment, which involves the complete excision of the whole thrombosed hemorrhoid. Some have reported that metronidazole would be effective in the management of post-hemorrhoidectomy pain. A thrombus is a collection of blood cells that can block blood flow through a blood vessel [47]. Because there is a risk of the thrombus forming again, surgical procedures such as incision and drainage are not advised [48,49].

**Conclusion**

The most common kind of anorectal disease that occurs during pregnancy is hemorrhoids, particularly in the third trimester [50]. At the beginning of treatment for hemorrhoids that occur during pregnancy, a conservative approach is utilized. The most significant risk factor, which is also present in the general population, is refractory constipation, which is often accompanied by the possibility of traumatic vaginal birth. In order to limit the incidence of symptomatic hemorrhoids, it is crucial to avoid constipation during pregnancy, particularly after childbirth. Short-term relief of symptoms may be achieved through the use of local interventions such as sitz baths, ice, or ointments containing anesthetics, phlebotonics, or glucocorticoids, either alone or in combination. Surgery for an incurable sickness ought to be put off until the fetus is no longer in danger, or even better, until after the baby has been born. Excision is necessary as soon as possible for external hemorrhoids that have developed acute strangulation thrombosis.

**Acknowledgements**

Not applicable.

**Conflict of Interest**

No potential conflict of interest relevant to this article was reported.

**ORCID iD**

Hyo Seon Ryu: https://orcid.org/0000-0003-2606-9973

**Author Contribution**

The article is prepared by a single author.
Hemorrhoid during Pregnancy

References

30. Lee BH, Stoll BJ, McDonald SA, Higgins RD. Neurodevelopmental outcomes of extremely low birth weight infants exposed


