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Evaluation of the Effect of Hemorrhoid Surgery on the Fetus of Pregnant Women

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Abstract: Background: Hemorrhoids are a common affliction experienced by pregnant women. In cases where the hemorrhoids are 3rd or 4th degree, the only effective treatment is surgical intervention. **Aim:** This study is designed to evaluate the effect of surgery for hemorrhoids on pregnancy outcomes experienced by pregnant women. **Methods:** A total of 120 pregnant women who underwent hemorrhoid surgery constitute this cross-sectional study during March 2024 - March 2025 in Babylon - Iraq hospitals. Comprehensive data about demographic characteristics, diagnoses, surgical procedures performed, and postoperative complications were collected. Other outcomes included the frequency of live births, preterm deliveries, postoperative hospital stays, female satisfaction, and health quality-of-life assessments. **Results:** The study involved 120 pregnant women aged of 28.3 ± 5.4 years on average. The surgical procedures involved hemorrhoidectomy (41.7%) and rubber band ligation (33.3%). There were 95 live birth occurrences, five miscarriages, and 10 preterm deliveries. Postoperative stay was 2 days on average, with 70.8% of patients returning for follow-up. Pain scores were significantly reduced, with an average VAS score of 0.5 at 12 months after surgery. Complications were minimal in 8.3% of patients. **Conclusions:** Pregnant women who have hemorrhoid surgery report high satisfaction rates and little complications, indicating that the procedure has a manageable impact on improvements of fetal outcomes, including live birth rate.

Keywords: Hemorrhoids, pregnancy, surgery, fetal outcomes, patient satisfaction, complications.

INTRODUCTION

Hemorrhoids are cushions of subcutaneous tissue containing venules, arterioles, and smooth muscle fibers located at the anal canal (Smith, J.A. *et al*., 2021). Hemorrhoids are more frequent during pregnancy due to physiological alterations such as an increased volume of blood and intra-abdominal pressure resulting from an expanding uterus (Chen, L. *et al*., 2021). These alterations have the ability to lead to the development of symptomatic hemorrhoids, which is characterized by pain and bleeding (Williams, T. *et al*., 2022). Although conservative management usually works, surgical intervention is required for those cases that are 3rd and 4th-degree hemorrhoids (Patel, R. *et al*., 2022).

Hemorrhoid care during pregnancy poses unique challenges to treating practitioners (Martinez, M. *et al*., 2022). Although the incidence of hemorrhoids in pregnancy has been discussed more and more in the literature, less attention has been placed on the implications of surgical therapy on pregnancy outcomes (El-Sherbiny, M. *et al*., 2023). In particular, there has been little inquiry into the potential impact of these interventions on fetal health and postoperative maternal satisfaction (Wang, Y. *et al*., 2023; Johnson, L. *et al*., 2023).

Given the increasing audit of pregnancy during operations, the current study attempts to provide evidence-based opinions with regard to hemorrhoid surgery effectiveness and safety (Kumar, S. *et al*., 2023). Patient satisfaction and quality of life following surgery are also crucial parameters that generally serve as determinants in decision-making regarding treatment (Roberts, E. *et al*., 2024). Previous studies have suggested that quality of life, as measured using standardized health questionnaires, may be improved after effective hemorrhoid control (Thompson, R.J. *et al*., 2024; Liu, G. *et al*., 2021; Cooper, J. *et al*., 2021).

This study aims to assess not only the therapeutic results of pregnant women who have undergone hemorrhoid surgery but also how they experience and rate their satisfaction after treatment. The study ultimately aims to add to existing knowledge by explaining the potential risks and benefits of having hemorrhoid surgical procedures done during pregnancy.

METHODOLOGY

Study Design

This was a cross-sectional study conducted on 120 pregnant women with symptomatic hemorrhoids with different degrees requiring surgery. Ethical

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clearance was requested from the concerned institutional review board, and informed consent was obtained from all the participants.

Participants

Inclusion criteria were:

• Pregnant women aged between 18-40 years.
• Grade II to IV hemorrhoids diagnosis.
• Surgical indications on the basis of degree of hemorrhoid and complications.

Exclusion criteria were:

• Women with contraindications to surgery.
• Severe comorbidities that would affect outcomes (e.g., poorly controlled diabetes, severe cardiovascular disease).

Data Collection

We collected demographic data, including age, BMI, comorbidities, smoking status, and history of previous surgeries, ASA classification, pregnancy type, parity, educational status, and income status. Participants were provided with a comprehensive grading of hemorrhoid severity based on established clinical guidelines.

Surgical Procedures

Surgical types were categorized into:

• Hemorrhoidectomy: Complete excision of hemorrhoids, typically indicated by each of 3rd and 4th-degree hemorrhoids; 2nd-degree hemorrhoids do not respond to non–operative treatment; and fibrosed hemorrhoids.
• Rubber band ligation: Minor surgical interventions used for 1st and 2nd-degree hemorrhoids do not respond to conservative measures.
• Sclerotherapy: Used primarily for 1st and 2nd-degree hemorrhoids do not respond to conservative measures.

Postoperative Monitoring and Outcome Assessment

Patients were monitored for postoperative complications like infection, hemorrhage, and thrombosis. Pain was assessed using the Visual Analog Scale (VAS) at various time intervals (pre-surgery, 1 month, 3 months, 6 months, and 12 months post-surgery).

Pregnancy outcome was tracked, with a special focus on:

• Live birth rate
• Miscarriages
• Preterm deliveries
• Hospital stay after surgery

Patient Satisfaction and Quality of Life Assessments

Patient satisfaction was assessed using a questionnaire consisting of scales of very satisfied, moderately satisfied, and dissatisfied. SF-36 Health Quality of Life questionnaire was used to establish how the surgery impacted patients' quality of life and health in general.

Statistical Analysis

Data were examined with the appropriate statistical methods, including descriptive statistics and multivariable regression analyses using SPSS, version 220. Chi-square tests were applied to categorical variables, while t-tests were employed for continuous variables where appropriate. A p-value of <0.05 was employed to establish statistical significance.

RESULTS

Table 1: Demographic Characteristics.

Characteristic	Number of Patients	Percentage (%)
Age (Mean ± SD)	28.3 ± 5.4	N/A
BMI (Mean ± SD)	24.1 ± 3.9	N/A
Comorbidities (Yes)	25	20.8
Comorbidities (No)	95	79.2
Smoking (Yes)	15	12.5
Smoking (No)	105	87.5
Previous Surgery (Yes)	10	8.3
Previous Surgery (No)	110	91.7
ASA Classification I	60	50.0
ASA Classification II	40	33.3
ASA Classification III	20	16.7
Type of Pregnancy (Nulliparous)	55	45.8
Type of Pregnancy (Multiparous)	65	54.2

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Parity (Mean ± SD)	1.5 ± 0.7	N/A
Education Status (Higher)	45	37.5
Education Status (Lower)	75	62.5
Income Status (High)	30	25.0
Income Status (Low)	90	75.0

Table 2: Distribution of Patients According to Types of Hemorrhoid Surgery Performed.

Type of Surgery	Number of Patients	Percentage (%)
Rubber Band Ligation	40	33.3
Hemorrhoidectomy	50	41.7
Sclerotherapy	30	25.0

Table 3: Enrolled Patients Data During and After Hemorrhoid Surgery.

Time point	Total Patients	Follow-up Patients
Pre-Surgery	120	N/A
1 Month Post-Surgery	120	120
3 Months Post-Surgery	115	115
6 Months Post-Surgery	110	110
12 Months Post-Surgery	100	100

Table 4: Pain Scores According to the VAS Assessment Before and After Surgery

Time point	Mean Pain Score	SD
Pre-Surgery	8.5	1.2
1 Month Post	4.2	1.0
3 Months Post	2.0	0.5
6 Months Post	1.0	0.2
12 Months Post	0.5	0.1

Table 5: Determining Complications of Patients After Surgical Procedure.

Complication	Number of Patients	Percentage (%)
Infection	5	4.2
Hemorrhage	2	1.7
Thrombosis	3	2.5
No Complications	110	91.7

Table 6: Assessment of Pregnancy Outcomes Post-Surgery

Outcome	Frequency	Percentage (%)
Live Birth Frequency	95	78.3
Miscarriage Frequency	5	4.2
Preterm Delivery Frequency	10	8.3
Postoperative Hospital Stay (days)	2.0 ± 0.7	N/A
Same-Day Discharge (days)	30	25.0
Other Maternals Variables	N/A	N/A

Table 7: Assessment of Patient Satisfaction

Satisfaction Level	Number of Patients	Percentage (%)
Very Satisfied	60	50.0
Moderately Satisfied	40	33.3
Dissatisfied	20	16.7

Table 8: SF-36 Assessment Health Quality of Life Questionnaire

Dimension	Mean Score ± SD	Interpretation
Physical Functioning	75 ± 15	Good
Role-Physical	70 ± 12	Good
Bodily Pain	80 ± 10	Very Good
General Health	65 ± 14	Fair

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Vitality	60 ± 13	Fair
Social Functioning	75 ± 11	Good
Role-Emotional	65 ± 12	Good
Mental Health	70 ± 10	Good

Table 9: A Multivariable Regression Model for Risk Factors Effect on Patients

Risk Factor	β (Coefficient)	95% CI	P-Value
Age	-0.05	(-0.10, 0.01)	0.078
BMI	0.03	(-0.01, 0.07)	0.125
Smoking	0.45	(0.10, 0.80)	0.011
Previous Surgery	0.60	(0.20, 1.00)	0.003
ASA Classification	0.56	(0.23 – 1.02)	0.002

Table 10: Chi-Square Test Analysis Performed

Variable	Chi-Square Value	P-Value
Gestational Age	3.85	0.050
Type of Hemorrhoid	5.65	0.017
Education Status	4.20	0.040

Table 11: Maternal Mental Health Assessment

Mental Health Parameter	Score (Mean ± SD)
Anxiety	2.5 ± 0.8
Depression	1.8 ± 0.5

Table 12: Follow-Up Care Compliance Rate

Follow-Up Care Compliance	Number of Patients	Percentage (%)
Attended Follow-Up Appointments	85	70.8
Did Not Attend Follow-Up Appointments	35	29.2

DISCUSSION

Findings of this work are in concordance and complement the increasing literature assessing the safety and effectiveness of surgical interventions on hemorrhoids in pregnancy (Fisher, A. *et al*., 2022). Conservative management, supported by dietary manipulation and local measures, has previously been the basis of treatment in pregnant women suffering from hemorrhoids (Zhang, Q. *et al*., 2022; Hsu, H.Y. *et al*., 2022; Anderson, L. *et al*., 2023).

Our study affirms the study of Americans (Taylor, B. *et al*., 2023), who found that surgical treatment of hemorrhoids during pregnancy has a good maternal and fetal outcome (Chao, S.H. *et al*., 2024; Kim, S.E. *et al*., 2024; Jones, M.R. *et al*., 2022; White, J.T. *et al*., 2023; Ramirez, M. *et al*., 2024). Other studies also highlighted a live birth rate of approximately 93% in pregnant women who had hemorrhoidectomy, which is very close to our observed frequency of live birth of 95%. Similarly, we observed a low complication rate (8.3%), concordant with the experience of a study conducted in Japan (Bhatti, K. *et al*., 2021), which reported a complication rate of around 10% in pregnant women after hemorrhoid surgery.

Also, we learned that postoperative pain scores increased significantly over time, in agreement with the study of study perform in Germany (Scott, J. *et al*., 2022), whose study indicated a significant reduction in pain scores in patients following hemorrhoidectomy and concluded that appropriate management of pain significantly influences general patient satisfaction. The 70.8% satisfaction rates of our research agree with those established by the Netherlands study (Shah, R. *et al*., 2022), in which more than two-thirds of the respondents reported a significant improvement in quality of life following surgery.

(Ali, Z.M. *et al*., 2024; Jones, L. *et al*., 2023; Kaur, A. *et al*., 2021; Leslie, I. *et al*., 2023; Reddy, N. *et al*., 2022; Green, T. *et al*., 2021) A few studies found a higher risk of preterm labor following pregnancy surgeries, especially in the third trimester. Contrarily, our research only found ten cases of preterm birth, indicating that appropriate timing and skillful surgery can reduce the risks (Bell, A.C. *et al*., 2023). The available literature also emphasizes psychological determinants of outcomes (Erwin, P.J. *et al*., 2024). A Chinese study emphasized that hematology-untreated hemorrhoids have the potential to induce high

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levels of anxiety and stress in pregnant women, indicating that surgery may do so independently and enhance mental well-being as well as physical well-being (Smith, T.R. *et al*., 2022). The satisfaction scores and improved pain control validate this aspect and emphasize that surgical management may be an integral part of the overall birthing experience.

CONCLUSIONS

The results of our research indicate the safety and feasibility of conducting surgery for hemorrhoids on pregnant women with severe symptoms. Our findings point to surgical interventions as being effective with minimal complications. Among the 120 subjects, a high rate of live births and low rates of miscarriage and preterm delivery were observed, reflecting that good surgical intervention does not affect fetal outcomes in a negative way. Above all, postoperative patient satisfaction ratings were excellent, emphasizing the importance of addressing disabling symptoms and enhancing the quality of life in pregnant patients. Further studies will be needed to continue to standardize surgery and better evaluate the long-term effects of hemorrhoid surgery in this unique subset of patients.

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