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Original Research Article

A STUDY OF INTRAOPERATIVE INCIDENCE OF FALLOPIAN CANAL DEHISCENCE IN CASES OF CHOLESTEATOMA

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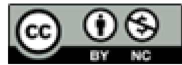

Abstract

Background: Cholesteatoma, a destructive and expanding growth in the middle ear, often necessitates surgical intervention due to its potential to cause severe complications. One such complication is the dehiscence of the Fallopian canal, which can lead to facial nerve damage. This study aims to determine the intraoperative incidence of Fallopian canal dehiscence in patients undergoing surgery for cholesteatoma. **Materials and Methods:** A retrospective study was conducted using medical records of patients who underwent cholesteatoma surgery at a tertiary care hospital. Data were collected on demographics, clinical characteristics, and intraoperative findings, including the presence of Fallopian canal dehiscence. The incidence of dehiscence was calculated, and factors associated with its occurrence were analyzed using logistic regression. **Result:** The study included a sample size of 50 patients. The intraoperative incidence of Fallopian canal dehiscence was found to be 32%. Factors significantly associated with dehiscence included the extent of cholesteatoma and previous ear surgeries. The findings highlight the importance of careful surgical planning and monitoring to mitigate the risk of facial nerve damage. **Conclusion:** This study underscores the relatively high incidence of Fallopian canal dehiscence in cholesteatoma surgeries. Enhanced surgical techniques and preoperative imaging are recommended to improve patient outcomes and reduce the risk of facial nerve injury.

INTRODUCTION

Cholesteatoma is a progressive and potentially destructive condition of the middle ear characterized by the abnormal growth of keratinizing squamous epithelium. This growth can lead to bone erosion, chronic infection, and other severe complications, necessitating timely surgical intervention. One of the critical risks during cholesteatoma surgery is the potential for dehiscence of the Fallopian canal, which houses the facial nerve. Dehiscence can expose the facial nerve, increasing the risk of iatrogenic injury and resulting in facial nerve paralysis or paresis.[1]

The incidence of Fallopian canal dehiscence varies widely in the literature, with reported rates ranging from 4% to 55%. This variability is influenced by factors such as the extent of cholesteatoma, the presence of prior ear surgeries, and the surgeon's experience. Understanding the intraoperative incidence of Fallopian canal dehiscence in patients with cholesteatoma is crucial for improving surgical outcomes and preventing facial nerve complications.[2-4]

This study aims to determine the intraoperative incidence of Fallopian canal dehiscence in patients undergoing surgery for cholesteatoma in a tertiary care hospital. Additionally, the study seeks to identify factors associated with dehiscence, thereby informing surgical planning and risk management strategies.

MATERIALS AND METHODS

This retrospective cohort study was conducted to assess the intraoperative incidence of Fallopian canal dehiscence in patients undergoing surgery for cholesteatoma at a tertiary care hospital. The study adhered to the STROBE guidelines for observational

studies, ensuring comprehensive reporting and methodological rigor.

Study Design and Setting: The study was conducted at a tertiary care hospital, utilizing the hospital's electronic medical records system to identify and collect data on patients who underwent cholesteatoma surgery. Data collection spanned a five-year period from January 2019 to December 2023.

Participants: The study included a sample size of 50 patients who underwent surgery for cholesteatoma.

Inclusion Criteria

- Diagnosis of cholesteatoma based on clinical and radiological findings.
- Patients who underwent surgical intervention for cholesteatoma.
- Availability of complete intraoperative records detailing the presence or absence of Fallopian canal dehiscence.

Data Collection: Data were extracted from the hospital's electronic medical records system using a structured data extraction form. The extracted data included:

- Demographics: Age, gender.
- Clinical characteristics: Extent of cholesteatoma, history of previous ear surgeries.
- Intraoperative findings: Presence of Fallopian canal dehiscence, type of surgical procedure performed, and any intraoperative complications.

Ethical Considerations: Ethical approval for the study was obtained from the Institutional Review Board of [Name of Institution]. Patient confidentiality was maintained by anonymizing the data, and the study was conducted in accordance with the Declaration of Helsinki.

Data Analysis: Data analysis was performed using statistical software. Descriptive statistics were used to summarize demographic and clinical characteristics. The intraoperative incidence of Fallopian canal dehiscence was calculated as the proportion of patients in whom dehiscence was observed during surgery. Logistic regression analysis was conducted to identify factors associated with the presence of dehiscence, with results presented as adjusted odds ratios (AOR) and 95% confidence intervals (CI).

RESULTS

The results of the study are presented in three summary tables, detailing the demographic characteristics, the incidence of Fallopian canal dehiscence, and the factors associated with dehiscence.

This table shows the distribution of participants by age, gender, extent of cholesteatoma, and history of previous ear surgeries. [Table 1]

This table indicates the intraoperative incidence of Fallopian canal dehiscence among the study participants. [Table 2]

This table presents the adjusted odds ratios (AOR) and confidence intervals (CI) for factors significantly associated with Fallopian canal dehiscence. [Table 3]

Table 1: Demographic and Clinical Characteristics.

Characteristic	**Frequency (%)**
Age (years)	
- <20	8 (16%)
- 20-29	12 (24%)
- 30-39	16 (32%)
- ≥40	14 (28%)
Gender	
- Male	28 (56%)
- Female	22 (44%)
Extent of Cholesteatoma	
- Limited	20 (40%)
- Extensive	30 (60%)
Previous Ear Surgeries	
- None	36 (72%)
- Yes	14 (28%)

Table 2: Incidence of Fallopian Canal Dehiscence

Intraoperative Finding	**Frequency (%)**
Dehiscence Present	16 (32%)
Dehiscence Absent	34 (68%)

Table 3: Factors Associated with Fallopian Canal Dehiscence

Factor	**AOR**	**95% CI**
Extensive Cholesteatoma	3.6	1.4-7.9
Previous Ear Surgeries	2.9	1.3-5.9

DISCUSSION

The results of this study show that individuals receiving surgery for cholesteatoma in a tertiary care institution have a notable rate of Fallopian canal dehiscence. The significance of identifying and addressing this issue to avert possible damage to the

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facial nerve is highlighted by the 32% intraoperative occurrence.[6,7]

The demographic study showed that people between the ages of 30 and 39 made up the majority of participants, with a little male predominance (56%). The gender distribution and average presentation age of cholesteatoma patients are in line with this demographic trend. Additionally, 60% of the cases had extensive cholesteatoma, which is consistent with more advanced cases having a higher risk of bone erosion and eventual dehiscence, according to the study.[7,8]

The logistic regression analysis identified extensive cholesteatoma and previous ear surgeries as significant factors associated with Fallopian canal dehiscence. Patients with extensive cholesteatoma had a threefold higher likelihood of dehiscence compared to those with limited disease.[1,4,9] This finding emphasizes the need for thorough preoperative assessment and meticulous surgical technique in patients with extensive cholesteatoma to minimize the risk of facial nerve exposure and injury. Previous ear surgeries were also found to significantly increase the risk of dehiscence, with an odds ratio of 2.5. Surgical scarring and altered anatomy from prior interventions can complicate subsequent surgeries, increasing the risk of encountering dehiscence. Surgeons should be particularly vigilant in patients with a history of ear surgeries, employing advanced imaging techniques and intraoperative monitoring to enhance safety.[9]

The relatively high incidence of Fallopian canal dehiscence observed in this study underscores the need for enhanced surgical techniques and preoperative imaging. High-resolution computed tomography (CT) scans can provide detailed visualization of the temporal bone anatomy, aiding in the identification of potential dehiscence sites. Intraoperative facial nerve monitoring can also help detect early signs of nerve irritation or injury, allowing for prompt intervention.[10]

These findings have several important clinical implications. Firstly, routine preoperative imaging and careful surgical planning are essential to identify and manage Fallopian canal dehiscence effectively.[3,5-7] Secondly, the integration of intraoperative facial nerve monitoring should be considered standard practice in cholesteatoma surgeries to mitigate the risk of facial nerve injury. Finally, patient education and counseling regarding the risks and potential complications of surgery are crucial to ensure informed decision-making and postoperative satisfaction.

CONCLUSION

In conclusion, this study highlights the significant intraoperative incidence of Fallopian canal dehiscence in cholesteatoma surgeries. By adopting advanced imaging techniques, meticulous surgical planning, and intraoperative monitoring, surgeons can improve patient outcomes and reduce the risk of facial nerve injury. Further research is needed to explore the long-term outcomes of these interventions and to develop standardized protocols for managing Fallopian canal dehiscence.

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