ENHANCING STOMACH CARCINOMA STAGING: A COMPREHENSIVE REVIEW OF THE ROLE OF STAGING LAPAROSCOPY AS AN ADJUNCT TO CECT ABDOMEN

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INTRODUCTION

Stomach carcinoma, a formidable adversary in the realm of oncology, poses significant challenges in terms of accurate staging and subsequent treatment planning. As medical science progresses, the need for refining staging methodologies becomes paramount, and the integration of innovative techniques becomes imperative [1]. This article delves into the intricacies of stomach carcinoma staging, shedding light on the emerging role of staging laparoscopy as a crucial adjunct to contrast-enhanced computed tomography (CECT) in enhancing stomach carcinoma staging.

Materials and Methods

Study setup and design

• Study Area: The study was conducted in the Department of Surgery at Indira Gandhi Medical College and Hospital, Shimla.

• Study Duration: The study spanned a period of one year.

• Study Description: This was a prospective study.

Study population

• The study included patients with biopsy-proven gastric carcinoma in the Department of Surgery, IGMC, Shimla, who met the inclusion criteria.

• Inclusion Criteria

1. Patients with endoscopic biopsy-proven carcinoma of the stomach deemed resectable on CECT thorax, abdomen, and pelvis.

2. Those who provided consent to participate in the study.

• Exclusion Criteria

1. Patients who received neoadjuvant chemotherapy before staging laparoscopy.
2. Patients with proven metastasis on CECT thorax, abdomen, and pelvis.

3. Patients who did not provide consent.

**Methodology**

- All eligible patients underwent a series of investigations, including haemogram, renal function tests, liver function tests, CEA, CA 19-9, chest X-ray, CECT scan, staging laparoscopy, diagnostic lavage, and histopathological examination (HPE) of biopsy specimens obtained during staging laparoscopy.
- A written informed consent was obtained from all participants.
- Specific protocols were followed for CECT abdomen scan, staging laparoscopy, and diagnostic lavage.

**CT protocol**

- CECT was performed on a 64-slice MDCT (Light Speed VCT Xte: GE Healthcare).
- Patients underwent an overnight fast and received approximately 1.5-2 L of water as neutral oral gastrointestinal contrast, starting 2 h prior to the scan.
- Dual-phase CECT was conducted in late arterial and portal venous phases.
- Scan parameters included a slice thickness and interval of 5 mm and a helical scan type.
- Intravenous contrast dose was 1.5-2 ml/kg body weight administered at a rate of 3.5 –4 ml/second by an automatic pressure injector.

**Staging laparoscopy protocol**

- Patients were placed in the supine position under general anesthesia.
- A 12 mm sub/supra umbilical incision was made, and pneumoperitoneum with CO2 was established.
- Laparoscopy was performed using a 30° telescope, with additional 5-mm ports inserted as needed.
- The entire abdominal cavity was systematically inspected, and biopsies were taken from suspicious tissues.

**Diagnostic lavage protocol**

- Peritoneal lavage was conducted in patients without occult metastases during diagnostic laparoscopy.
- Definitive surgery was performed on patients deemed resectable during laparoscopy.

**Ethical considerations**

- Written informed consent was obtained from all participants.
- Confidentiality of collected information was strictly maintained, and individual identities were protected.
- Study results were intended solely for academic purposes and to frame recommendations for service improvement.

**RESULTS**

In our study, we evaluated the distribution of patients based on TNM staging using contrast-enhanced computed tomography (CECT). Table 1 illustrates the distribution across different stages, revealing a predominance of Stage IIA (21.9%) and Stage IIIA (25%). Locally advanced gastric cancer cases, as assessed by laparoscopy and CECT, demonstrated infiltration into other organs in 53.1% of cases. Notably, occult metastasis was identified in 28.2% of cases, with 66.7% of ascites cases also exhibiting occult metastasis.

Table 1: Distribution of patients according to TNM staging on CECT

<table>
<thead>
<tr>
<th>CECT Staging</th>
<th>Number of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IB</td>
<td>3</td>
<td>9.4%</td>
</tr>
<tr>
<td>IIA</td>
<td>7</td>
<td>21.9%</td>
</tr>
<tr>
<td>IIB</td>
<td>5</td>
<td>15.6%</td>
</tr>
<tr>
<td>IIIA</td>
<td>8</td>
<td>25%</td>
</tr>
<tr>
<td>IIIB</td>
<td>5</td>
<td>15.6%</td>
</tr>
<tr>
<td>IIIC</td>
<td>4</td>
<td>12.5%</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 2: Distribution of patients with locally advanced cancer

<table>
<thead>
<tr>
<th>Locally advanced gastric cancer</th>
<th>Staging laparoscopy</th>
<th>CECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infiltration of serosa</td>
<td>3 (9.4%)</td>
<td>8 (25%)</td>
</tr>
<tr>
<td>Infiltration into other organs</td>
<td>17 (53.1%)</td>
<td>8 (25%)</td>
</tr>
<tr>
<td>Occult metastasis</td>
<td>9 (28.2%)</td>
<td>Nil</td>
</tr>
</tbody>
</table>

Table 3: Occult metastasis in relation to cect staging

<table>
<thead>
<tr>
<th>CECT Stage</th>
<th>Occult metastasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>III</td>
<td>8 (88.9%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9 (100%)</td>
</tr>
</tbody>
</table>

Ascites was present in total of 9 cases (28.2%). Out of these 9, in 6 cases (66.7%) occult metastasis was also present along with ascites.
DISCUSSION

Stomach carcinoma presents a significant clinical challenge, demanding precise staging for optimal therapeutic strategies. Our comprehensive review explores the evolving landscape of stomach carcinoma staging, emphasizing the synergistic role of staging laparoscopy alongside contrast-enhanced computed tomography (CECT) of the abdomen [9]. The limitations of CECT in detecting subtle peritoneal metastases have prompted the integration of staging laparoscopy, a minimally invasive procedure that offers unique insights into the peritoneal cavity. By combining these modalities, our study reveals a nuanced understanding of the disease, with implications for treatment personalization [3].

Our findings highlight the prevalence of Stage IIA and IIA gastric cancer, underscoring the importance of accurate staging for treatment planning. Locally advanced cases demonstrated infiltration into other organs, emphasizing the need for precise diagnostic tools [4]. The absence of occult metastasis in cases identified by CECT underscores its limitations, while staging laparoscopy detected occult metastasis in 28.2% of cases, substantiating its value in identifying metastatic lesions not captured by traditional imaging. The association between occult metastasis and CECT staging, particularly in Stage III, emphasizes the complementary nature of these diagnostic approaches. Notably, the presence of occult metastasis in ascites cases suggests a potential correlation with disease progression, warranting further investigation [5].

Our study, conducted at Indira Gandhi Medical College and Hospital, Shimla, integrates CECT, staging laparoscopy, and diagnostic lavage, providing a comprehensive evaluation of gastric cancer patients. The meticulous study design, ethical considerations, and detailed methodologies contribute to the reliability of our results [6]. Overall, our research advocates for the integration of staging laparoscopy as a valuable adjunct to CECT in enhancing the precision of stomach carcinoma staging [7]. The evolving role of these modalities heralds a new era in the pursuit of optimal management strategies for gastric cancer patients, with potential implications for improved patient outcomes. Our study adds to the existing body of knowledge, fostering a deeper understanding of the disease and paving the way for future advancements in diagnostic and therapeutic approaches [8].

CONCLUSION

In conclusion, our study advocates for the integrative use of staging laparoscopy with contrast-enhanced computed tomography (CECT) in stomach carcinoma staging. With a focus on patients at Indira Gandhi Medical College and Hospital, Shimla, our findings highlight the limitations of CECT in detecting occult metastasis and underscore the value of staging laparoscopy in providing crucial insights. This complementary approach enhances the precision of staging, offering potential improvements in treatment strategies and patient outcomes. The convergence of imaging and surgical modalities signifies a promising avenue for refining the management of stomach carcinoma in the ongoing pursuit of optimal patient care.

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AUTHORS CONTRIBUTIONS
All authors have contributed equally

CONFLICT OF INTERESTS
Declared none

REFERENCES