Early Experience with Minimally Invasive Oncologic Surgery at a Peripheral Cancer Centre in North East India

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Abstract: Introduction: The use of minimally invasive surgery (MIS) in oncology in certain cancers has been proven to be non-inferior to open procedures with superior short term outcomes in several randomized controlled trials. Methods: A retrospective study of MIS done for cancers of esophagus, lung, colorectal cancers and gastric cancers was done for the study period 1st Jan 2018 to 31st Dec 2019. Results: A total of 46 (54.7%) procedures were done with the use of MIS out of a total of 84 cases. Trans-thoracic esophagectomy (TTE) was done using VATS in 25 cases (62.5%). The mean duration of ICU stay was 2 days and mean duration of hospital stay was 12 days. The number of surgeries done by MIS for colorectal cancers was 17 (44.7%) out of a total of 38 cases. This included 3 lap right hemicolectomies, 9 Lap APR, 5 Lap LAR/ULAR. The mean ICU stay was 1 day and the mean hospital stay was 11 days. The mean pain score was 3. Also performed was one case of VATS left lung upper lobectomy, one case of VATS right lung metastasectomy, 2 cases of lap-assisted distal gastrectomy with D2 lymphadenectomy. Conclusion: The acceptance of MIS in our institute has produced favourable short term results which appear encouraging.

Keywords: Minimally invasive surgery

1. Introduction

The use of minimally invasive surgery (MIS) in oncology in certain cancers has been proven to be non-inferior to open procedures with superior short term outcomes in several randomized controlled trials. For example, MIS has been associated with less incisional pain and reduced need for opioids, shorter length of stay, as well as lower overall morbidity and improved quality of life.

2. Materials and Methods

A retrospective study of MIS done for cancers of esophagus, lung, colorectal cancers and gastric cancers was done for the study period 1st Jan 2018 to 31st Dec 2019. Simple statistical tools were used for analysis.

3. Results

A total of 46 (54.7%) procedures were done with the use of MIS out of a total of 84 patients. Trans-thoracic esophagectomy (TTE) was done using VATS in 25 patients (62.5%) and the remaining were done using open right lateral thoracotomy 4 patients (10%) and trans-hiatal approach (THE) 11 patients (27.5%). Conversion to a thoracotomy was needed in 3 cases (12.5%). The indications were uncontrolled bleeding in two patients and a left bronchial injury in one patient. Anastomotic leak was noted in 3 patients (12.5%). A similar incidence (12.5%) of hoarseness of voice due to recurrent laryngeal nerve palsy was noted and it was transient in all instances. The median duration of ICU stay was 2 days (range was 1-4 days) and median duration of hospital stay was 12 days (range was 11-23 days). The median post-operative pain score was 2 (range was 1-4).

Figure 1: Showing thoracoscopic mobilization of the esophagus (VATS TTE)

Figure 2: Specimen of esophagectomy
The number of surgeries done by MIS for colorectal cancers was 17 (44.7%) out of a total of 38 patients. This included 3 laparoscopic right hemicolectomies, 9 laparoscopic abdomino-perineal resections (APR), 5 laparoscopic low or ultra-low anterior resections (LAR/ULAR). The conversion rate to open procedure was 11.4%. The median ICU stay was 1 day (range was 1-3 days) and the median hospital stay was 11 days (range was 7-26 days). These numbers compared favourably against the open surgery patients, where median values were 2 days (range 1-5 days) and 14 days (range 8-31 days) respectively. The incidences of surgical site infections (SSIs) were higher in the open surgery patients (3 vs 1). The median pain score was 3 in MIS patients and 6 in open surgery patients.

There was one patient who underwent VATS left lung upper lobectomy, one patient of VATS right lung metastasectomy and 2 patients with laparoscopic-assisted distal gastrectomy with D2 lymphadenectomy.

The numbers of MIS surgeries increased in the year 2019 compared to 2018 (Tables 1, 2, 3). There was an increase of 56% in MIS approach in esophageal cancer and 38% in colorectal cancer resections (Table 4).

### Table 1: Showing the number of surgeries for esophageal cancer

| Esophagectomy | 2018 | 2019 |
|---------------|------|------|
| Open TTE      | 14   | 04   |
| THE           | 09   | 11   |
| VATS TTE      | 02   | 25   |
Table 2: Showing the number of surgeries for colorectal cancer

| Colorectal Surgery      | 2018 | 2019 |
|-------------------------|------|------|
| Open APR                | 09   | 07   |
| Open LAR                | 09   | 12   |
| LAP APR                 | 02   | 09   |
| LAP LAR/ULAR            | 01   | 07   |
| LAP HEMICOLECTOMY       | 00   | 03   |

Table 3: Showing the number of surgeries for other cancers

| Other Lap Cases          | 2018 | 2019 |
|--------------------------|------|------|
| LAP Distal Radical Gastrectomy | 00   | 02   |
| VATS Metastasectomy      | 00   | 01   |
| VATS Left Lung Upper Lobectomy | 00   | 01   |

Table 4: Showing the percentages of surgeries done by MIS approach, year-wise

| Thoracoscopic Surgery    | 2018 | 2019 |
|--------------------------|------|------|
|                          | 08%  | 64%  |
| Laparoscopic Colorectal Surgery | 14%  | 52%  |

Figure: Showing the increasing trend of use of MIS in surgery at our institute, year-wise.

4. Discussion

Minimally invasive surgery (MIS) refers to surgical procedures that limit the size of surgical incisions needed so that the blood loss, wound healing time, associated pain and scarring, hospitalization time, risk of infection, and postsurgical complications are usually less.

Surgery has long been thought of as a “stressor” with associated immunomodulation and possibly derivative effects on cancer progression. Many hypotheses exist regarding the immunologic response to surgery and whether a less “stressful” MIS might result in better oncologic outcomes.

Neoplasms such as early gastric cancer, colorectal cancer, and esophageal cancer are now preferentially approached with minimally invasive surgery with decreased pain, lower wound infection rates, better postoperative pulmonary function, and shorter recovery time compared with traditional laparotomy. Robust studies showed that minimally invasive techniques could provide equivalent outcomes compared with traditional open approaches in many cases. At our institute, we have incorporated MIS techniques into our surgical practice, as per oncologic indications, in a very steadfast manner, for the last two years, as reflected in the data presented herein. Our experience is still very early and evolving, as we learn more and we hope to report a much bigger dataset in years to come.

We do not have a robot in our institute and our MIS experience is limited to laparoscopic approaches only.

5. Conclusion

The use of MIS in our institute has produced favourable short term results which is very encouraging.

6. References

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