TRANSITION FROM OPEN TO LAPAROSCOPY FOR INTRA-ABDOMINAL PARAGANGLIONOMA ; LESSIONS LEARNT.

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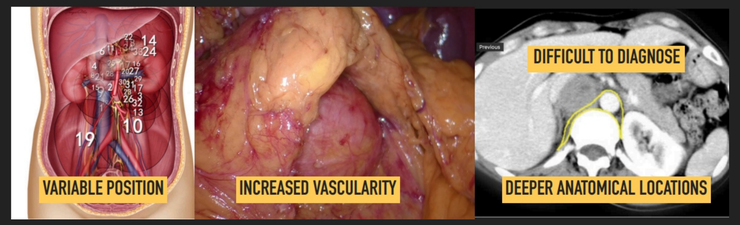
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PARAGANGLIONOMAS

- Chromaffin-cell tumours derived from extra-adrenal cells of sympathetic para-vertebral ganglia.
- Most of them are catecholamine (commonly noradrenaline) secreting neuro-endocrine tumours which lead to cardiovascular complications and mortality.
- Mostly sporadic with potential for metastasis present.
- Commonly seen on either side of vertebral column.
- Surgical excision remains the gold standard treatment.

PARAGANGLIONOMAS

WHAT MAKES PARAGANGLIONOMA CHALLENGING ????



HEMODYNAMIC INSTABILITY DURING INDUCTION, SUDDEN FLUCTUATION OF OF BLOOD PRESSURE INTRA-OP.

Rupture of capsule may lead to release of catecholamines which can lead to hemodynamic imbalance, loss of blood, cardiovascular complications.

Metastatic potential. Recurrence rate high in non functioning tumours.

Association with **synchronous** lessions, phaeochromocytoma's, familial syndromes .

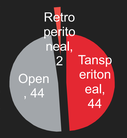
OBJECTIVES

- To assess feasibility and acceptability of Minimally Access approach for Abdominal Paraganglionoma (PGL) and compare morbidity with open approach.
- To Study variation in clinical presentation and anatomical locations.
- To study peri-operative complications, morbidity and mortality.

MATERIALS AND METHODS

METHODOLOGY

- Retrospective observational study of 98 patients diagnosed as Paraganglionoma from 2001 till March 2023.
- 8 patients of concomitant pheochromocytoma excluded in the study .
- 9 patients of laparoscopy were converted to open. They are considered as open technique cases in our study.



INCLUSION CRITERIA

- Both functioning and non functioning PGLs.
- Multiple synchronous intra-abdominal PGLs were also included.

EXCLUSION CRITERIA

- Metastatic disease at first presentation.
- Gross tumour infiltration of the great vessels on imaging leading to tumour inoperability.
- Concomitant pheochromocytoma.
- Lost to follow up or incomplete records.
- Contra-indication to General anaesthesia.

DIAGNOSTIC WORK UP

- Plasma free or 24-hour urine fractionated metanephrines and normetanephrines ± serum or 24- hour urine catecholamines for all cases. 1st investigation done for diagnosis.
- Abdominal/pelvic multiphasic CT (with low osmolar contrast) or MRI (no dye but less spatial orientation)
- Genetic counselling.
- As appropriate, if metastatic or multifocal disease suspected : (Radioisotope imaging)
- SSR-based imaging (eg, 68Ga- dotatate imaging preferred [PET/CT or PET/MRI] or SSR scintigraphy)
- FDG-PET/CT (skull base to mid- thigh). In cases where abdominal CT/MRI is negative.
- +Chest CT with or without contrast.
- MIBG scan.

PRE-OPERATIVE WORK UP

PRE-OPERATIVE TREATMENT AND ANAESTHETIC MANAGEMENT

Multi-disciplinary approach with collaboration between surgeons, cardiologist, endocrinologists and anaesthetists.

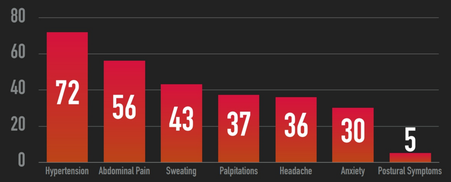
Alpha blockade with alpha 1 selective blocker with volume repletion and high salt diet for 7–14 days minimum or until stable . Add other antihypertensives if refractory

RECENTLY, WE HAVE ADVOCATED CALCIUM-CHANNEL BLOCKERS, WHICH CAUSE ARTERIOLAR VASODILATION, AS A SAFE ALTERNATIVE TO A-BLOCKADE.

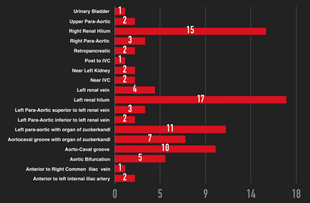
THE ADVANTAGES OF CALCIUM-CHANNEL BLOCKADE INCLUDE FEWER SIDE EFFECTS, LACK OF "OVERSHOOT HYPOTENSION," AND PREVENTION OF CORONARY ARTERY VASOSPASM. .

Results

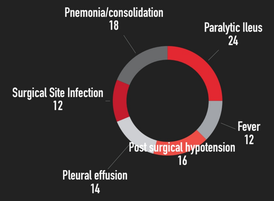
SYMPTOMATOLOGY



ANATOMICAL LOCATION



POST OPERATIVE COMPLICATIONS

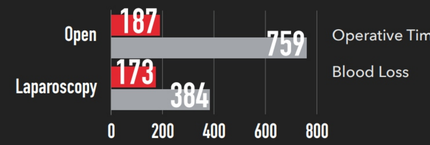


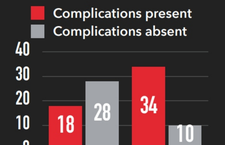
SEVERITY OF COMPLICATIONS

Complication	Calvien-Dindo grade	No of patients
Paralytic Ileus	1	24
Fever	2	12
Surgical site Infection	1	12
Post Surgical Hypotension	2	16
Pneumonia	4	18
Pleural Effusion	2/3	14

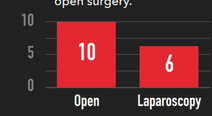
- Respiratory Complications are associated with highest morbidity and mortality.
- 9 patients required ventilatory support out of which 1 passed away due to Ventilator associated pneumonia (VAP) leading to subsequent ARDS. All these underwent open surgery or laparoscopy converted to open technique.

CORRELATION OF COMPLICATIONS ACCORDING TO SURGICAL TECHNIQUE





Average Hospital Stay during Laparoscopic Surgery was 10 days as compared to 6.3 days in open surgery.



DISCUSSION

PRE-OPERATIVE

- Proper diagnostic protocol must be followed.
- The accuracy of the preoperative diagnosis may be markedly improved by attaining the location and functional characteristics of the tumor.
- Multi-disciplinary approach with proper Anaesthetic management.
- Paraganglionomas are tumours where a failed Pre-operative work up results in disastrous complications which significantly increase mortality and morbidity.

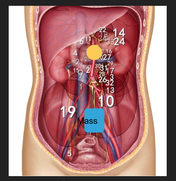
OPERATIVE

- General principles :
  - Reduce tumour manipulation to avoid catecholamine release.
  - Try to dissect the gland by retracting nearby fat and not capsule, to avoid compression of the tumour.
  - Meticulous surgical technique to avoid capsular rupture, which increases risk of tumour bleeding and loco-regional recurrence.
  - Conversion to open in case of bleeding or large tumour.

LAPAROSCOPY AS A DEFAULT INITIAL APPROACH FOR THESE TUMOURS AS IT REDUCES POST OPERATIVE MORBIDITY AND MORTALITY

OPERATIVE MANAGEMENT ON BASIS OF LOCATION OF TUMOUR

- Retroperitoneal approach is selected cases. In our study, mass posterior to IVC is operated by retroperitoneal laparoscopic approach.
- Ergonomic trocar placement according to location of tumour.
- Optic port should be placed 15-20cm away from the mass with 2 working ports and 1/2 ports for retractors.



CONCLUSSION

- Surgical resection of these tumours require adequate pre-operative preparations and evaluation of surgical risk.
- Careful selection of the patients and reading of radiology is important to plan these surgeries
- Laparoscopy is high effective in reducing post-operative morbidity and mortality and should be the default initial approach.
- Post-operative early mobilisation, adequate nutrition, physiotherapy and follow ups scanning to detect early metastasis is necessary.