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NewsLetter

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EDITORIAL

SAFE ANAESTHESIA IN CORONA TIMES

Humanity is witnessing an unprecedented tsunami of corona virus disease 2019 (COVID-19) patients. While our focus is on age as the major risk factor for contracting corona, cancer maybe an even bigger risk factor, also being ahealth care worker (HCW), irrespective of age, makes you vulnerable. Amongst HCW, certain specialities like anaesthesia, intensive care, head-neck surgery and gastrointestinal surgery are more exposed to aerosol-generating procedures like endotracheal intubation and tracheostomy which multiply not just their chances of exposure but also their viral load per exposure.

"Death due to untreated cancer is a much bigger reality than death due to COVID-19," is one perspective that advocates continuation of cancer therapy in corona times albeit by converting cancer hospitals into virtual corona-free fortresses with several tiers of barriers against Corona.

Triage of cancer patients *(How do we select our patients forSurgery)*

• **Curative-intent treatment**: Highest priority is ascribed to cancer patients aged <60yrs with life expectancy > 5yrs undergoing curative-intent therapy as against patientsundergoing non-curative intent treatment.
• **Age**: Surgery in all cancer patients above 65yrs of ageshould be deferred, this subsetbeing most susceptibleto COVID-19 with higher mortality rates.
• **Co-morbidities**: Any patient with uncontrolled diabetes, low left ventricular ejection fraction, prosthetic heartvalves, chronic hepatic, pulmonary or renal disease, should postpone surgery during the pandemic for fearof increased corona-mortality.
• **Immunosuppressants**: Post-chemotherapy, post-radiotherapy and chronic steroid therapy patientsmay be postponed being highly susceptibleto infection.
• **Site of surgery**: Breast, thyroid, parotid, renal andbasal cell cancer surgery (being slow-growing) caneasily be postponed for a month or so and not long.Patient withsymptomatic brain tumours with raised intracranial pressure, multiple myeloma patient with pathologicalfractures or surgical emergencies should be dealt without delay.

Triage of equipment

• COVID-19 tests should routinely be carried out in all patients posted for onco surgery irrespective of symptoms / foreign ravel / contact history. Presently, at RGCIRC, every patient scheduled for elective surgery is required to have an RT-PCR/Gene Xpert COVID negative report dated not earlier than 7 days before surgery. Rapid antigen test is not reliable or acceptable.
• In absence of powered air-purifying respirator (PAPR) sets, N95 respirators are essential for the person performing tracheal intubation and extubation while a surgical masksuffices in non aerosol-generating tasks.N95 masks can bereused if dried completely for 72h or heated to a temperatureabove 65°C for 30 min.
• Position one high quality heat andmoisture exchange filter (HMEF) at two places: betweenendotracheal tube and breathing circuit, and between expiratory limb and anaesthesia machine. These HMEFs remove 99% of airborne particles sized above 0.3 µm, reducing OT-contamination.
• Since most Indian OTs lack negative pressurization, it necessitates the positive pressuresystem and air-conditioning to be turned off.
• Laminar flowand functional high-efficiency filters are preferable.
• **PPE-kits** should be reserved for symptomatic, suspected orknown COVID-positive patients. An indigenous technique issuggested for the remaining patients. A double surgical mask, gown, double gloves (surgical gloves atop working gloves), and a transparent polythene bag with a breathing hole onthe posterior aspect (repurposing the plastic bag holding thefresh disposable-circuit) adorning the head and shouldersshould be worn by the intubating anaesthesiologist both at tracheal intubation and extubation. The imperviousplastic sheet routinely used under instrument-trolleys mayberepurposed to serve as a barrier for droplets / aerosolsreleased at extubation.
• **Customized, transparent, acrylic, "intubation boxes"** have been made available in our OTs with apertures for introduction of anaesthetist's arms, instruments and devices essential for laryngoscopy and intubation including fiberoptic intubation. Although they have equivocal utilityand make endotracheal intubation cumbersome and time-consuming, these boxes are expected to provide protection from direct splashes and aerosols. They need to be sterilized with bleach/bicarbonate wipes after each use.
• **Protective Face-shields and goggles** are advocated especially for HCW without spectacles.

Triage of personnel

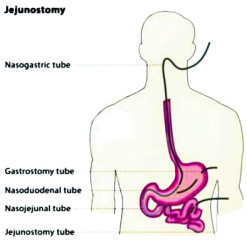
• Pregnant ladies, anaesthesiologists >60yrs, and those with multiple co-morbidities should not attempt tracheal intubation, extubation and other aerosol-generating procedures (suctioning, nebulization, fiberoptic bronchoscopy, CPAP, BiPAP, high-flow nasal oxygen therapy).
• The most experienced/skilled anaesthesiologistmust perform tracheal intubation.
• Not exceeding threeanaesthesiologists should remain in the OT during tracheal intubation/extubation.
• The OT-staff can be segregated intotwo non-intermixing teams working on alternatedays/weeks/fortnight to reduce hours ofexposure, cross-infection and stress.

Modification of anaesthesia technique

Minimizing aerosol generation and preventing the spread of generated aerosols is the cornerstone of ***COVID-prophylaxis in anaesthesia****.*
• Out of available airway-securing devices endotrachealintubation is preferred over bag-masking or supraglottic airwaydevices (LMA) owing to a better seal and reduced leakage ofpotentially contaminated aerosols.
• A vice (VE) grip requiringboth hands is advisable during preoxygenation, leaving thebagging and PEEP-adjustments to an assistant.

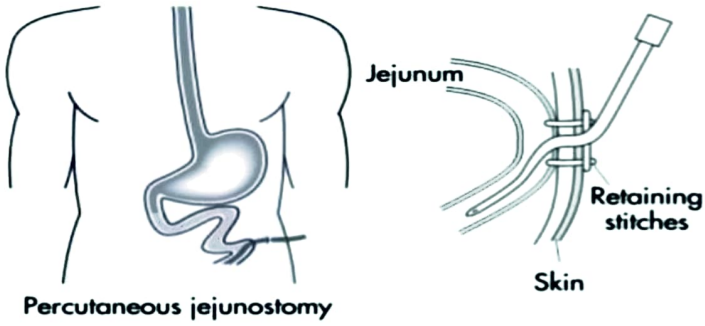
(Continued on Page No. 3rd)

PERCUTANEOUS IMAGE GUIDED JEJUNOSTOMY



For patients who are not able eat orally, for long term nutritional requirements enteral feeding is preferred over parenteral feeding. When enteral feeding is required for more than 30 days it is advisable to have a direct enteral access rather than naso-enteric feeding tubes as they can cause discomfort and complications such as sinusitis.

Usually gastrostomy is performed either through the percutaneous or endoscopic route for such purposes. In certain patients, jejunostomy is performed where a tube is placed directly into the small bowel loops called jejunum. It is usually performed through surgery by the surgeons in Operation Theaters. But nowadays, minimally invasive techniques can be used to perform percutaneous image guided jejunostomy. Though it is a technically more demanding procedure and involves a learning curve, it has proved to be a relatively safe and feasible technique for long-term feeding.



Indications:
- Prolonged (>4 weeks) enteral feeding in patients whose stomach has been removed or is inaccessible
- Malignant or benign obstruction of the digestive tract and especially patients with an obstruction after surgical treatment for carcinoma of the esophagus and cardia
- Leakage from the upper digestive tract following surgery or injury, severe pancreatitis, gastric paralysis, and neurologic disorders.
- Decompression of the jejunum in cases of bowel obstruction
- Recanalization of the biliary tree after a bilio-digestive anastomosis

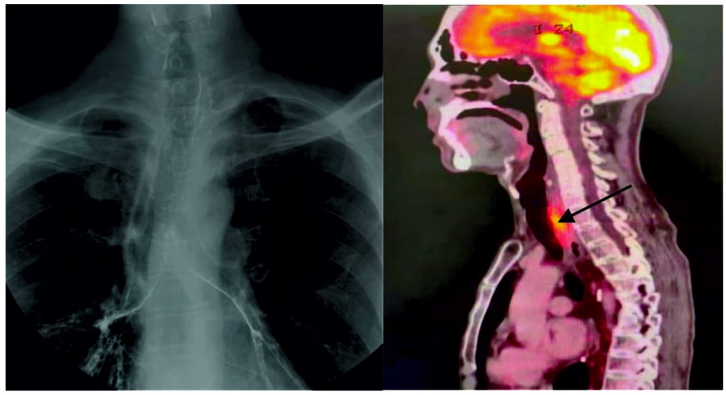
Contraindications:
- Ascites
- Uncorrectable bleeding disorders

Technique:
- Through the nasal route, with the help of angiographic catheter & guide wire, the digestive tract obstructions were crossed and catheter-wire passed through the upper digestive tract as far into the jejunum as possible using fluoroscopic guidance.
- Afterwards, jejunal loops were distended with 500-600 cc of lukewarm saline (NaCl 0.9%) mixed with dilute contrast medium to distend the jejunal loops.
- The most superficial jejunal loop was identified in upper left quadrant of the abdomen and punctured ultrasonically under local anaesthesia to place anchor sutures. Anchor sutures are used to put tractional force on the jejunal loop to keep it abutted to the anterior abdominal wall. Two such anchor sutures were deployed.
- The jejunal loop was punctured again and a guide wire was passed within the jejunal lumen. The tract was dilated followed by placement of 10-F locking loop pigtail catheter. The catheter position was confirmed on fluoroscopy.

Complications:
- Minor complications are seen in approximately 10% of patients which include inflammation of the skin around the catheter.
- The most dreaded complication is intraperitoneal leakage, which can cause peritonitis.

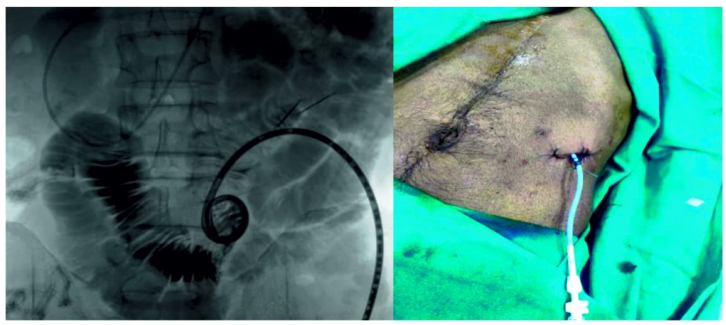
Our experience:
We performed three such cases during the COVID-19 pandemic which had increased and stretched the complexity of cancer care. It became all the more pertinent than ever to appropriately and fairly allocate the healthcare resources. Because of near complete occlusion of the digestive tract, all these patients had repeated aspirations into the respiratory airways and had aspiration pneumonias, thus, further increasing the risks associated with general anaesthesia. Therefore after evaluation by the surgical oncology teams, these patients were offered the choice of percutaneous image guided jejunostomy. The benefits, risks and costs of this procedure were explained to all the patients and their family members including post-procedure care.

Case No: 1
A 54 years old gentleman, known case of Ca Esophagus, received 28# of RT, 5 cycles of chemotherapy and then underwent McKeown's esophagectomy with gastric pull-up in June 2019 elsewhere. Now he presented to RGCI & RC with dysphagia and frequent aspirations and severe malnutrition. On evaluation, disease recurrence was found at the cervical esophagus and cervical esophago-gastric anastomosis causing significant esophageal compromise and proximal dilatation of cervical esophagus. His Barium swallow and meal examination showed contrast aspiration into the airways.



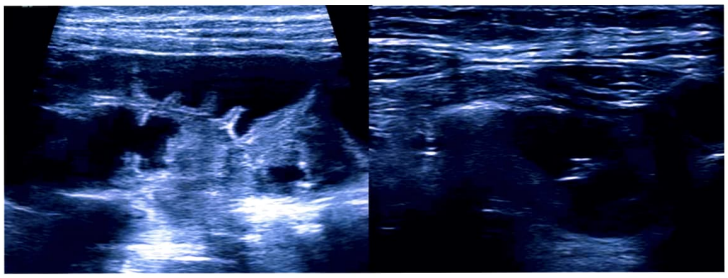
Barium Swallow & Meal examination showing aspiration of contrast material into the airways

Coronal PET/CT image demonstrating FDG avid soft tissue at the esophago-gastric anastomosis causing complete dysphagia

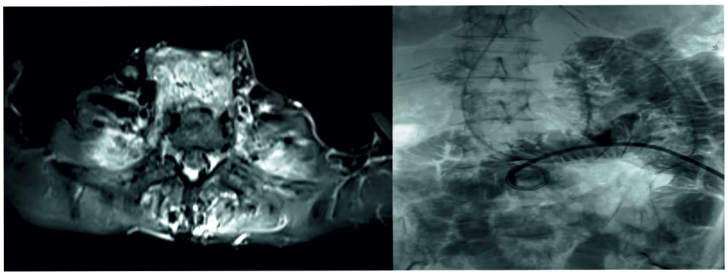


Final images of the Percutaneous Jejunostomy

Case No: 2
A 56 year old diabetic and hypertensive gentleman, known case of Ca Esophagus (lower 1/3rd Squamous Cell Carcinoma). He received 41.4 Gy/23# radiotherapy and concurrent chemotherapy (Paclitaxel + Carboplatin) followed by Robotic Mckeown's Esophagectomy in November 2019. After a few months he developed difficulty in swallowing. UGI endoscopy revealed anastomotic stricture and dilatation was done and was on regular dilatation every 2 weekly. He presented with metastatic disease and was started on Oral Capecitabine. He presented in May 2020 with complete dysphagia and UGI endoscopy revealed tight stricture in post-cricoid region and Ryle's tube placement could not be done even endoscopically .



Ultrasound guided puncture into the distended jejunal loops in left upper quadrant



MRI shows enhancing thickening in residual left oropharynx

Final fluorospot image of the Percutaneous Jejunostomy catheter

Case No.3
A 72 years old lady, diagnosed with Ca Pyriform sinus in 1998, received EBRT 66Gy/33#. On follow-up she developed recurrence in post-cricoid area. She underwent salvage laryngopharyngectomy with esophagectomy with gastric pull-up in January 1999. She was on follow-up and presented in 2019 with second primary Ca oropharynx for which she received re-radiation to Head and Neck 60Gy/30# followed by metronomic chemotherapy till February 2020. She developed a pharnygo-cutaneous fistula and couldn't take feeds orally and was referred to us for percutaneous Jejunostomy.

All the above three patients are doing well clinically and no complications were noted and have followed up with us. These procedures open up new avenues for patients who are at high risk for surgical Jejunostomy and highlights the importance of collective team effort.

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EDITORIAL (CONTINUED)

• Suspected / proven COVID patients may be asked to remove all facial hairto facilitate bag-masking.
• **Rapid sequence induction** using generous doses of muscle relaxant (IV Rocuronium > 1.5mg/kg ideal body weight and IV succinylcholine 1.5 mg/kg total body weight) to hasten onsetof neuromuscular block and reduce risk of coughing on airway instrumentation is advisable. Sellicks-manoeuvre can be omitted due to dubious utility and heightened exposure–risk to the performing assistant. Low tidal volume breaths maybe given ifrequired.
• Video laryngoscopy is preferable to direct laryngoscopy.
• Low flow, closed-circuit anaesthesia is preferable to semi closed breathing circuits.
• Avoid fiberoptic bronchoscopy wherever possible.
• PPE may hinder auscultatory confirmation of ETT placement necessitating end-tidal carbon dioxide detection
• Total intravenous anaesthesia is preferableto volatile anaesthetics to curtail aerosol.
• Coughing during emergence from GA affects 40–76% of intubated patients. Medications to reduce emergence coughing [lignocaine (i.v., intracuff, topical, or tracheal), dexmedetomidine, fentanyl should be employed.
• Dedicated COVID-19 intubation tray should be available containing a hyperangulated video laryngoscope blade,Macintosh direct laryngoscope, endotracheal tubes, bougie / stylet, tube-securing tapes, oropharyngeal andnasopharyngeal airways, second-generation SAD, emergency tracheostomy / needle cricothyrotomy scalpel and blade, andlarge-bore nasogastric tube. Sachet lubricant, viral filters and inline suction catheter are essential components.
• Regional anaesthesia is preferable to GA wherever feasible.
• Closed loop communication is to be practised amongcaregivers.
• Training for donning and doffing technique of PPE-kit as per WHO-guidelines should be arranged.

Coping with cancer patients during COVID-19 pandemic at RGCIRC: Our experience

Several administrative and engineering measures havebeen undertaken in an effort to serve cancer patients taking adequate safety precautions in a resource constrained setting.
1.Preliminary assessment in dedicated fever / flu clinic
• Set up near the main entrance gate
• Every patient screened for temperature, history of cough/cold, travel to a COVID affected area
2. Liberal use of hand sanitizers
• Every person entering / exiting the hospital is required to wipe hands with alcohol hand sanitizers provided by security guard
3. Face masks
• All HCW, patients and attendants required to wear face mask for self-protection and preventing aerosol transmission.
• Surgical masks are provided to every hospital staff member.
• In high risk areas (OT, ICU, Emergency) N95 masks are provided with guidelines for reuse due to limited availability.
4. Hydroxychloroquine
• Prophylaxis for HCW was offered as per ICMR guidelines (two 400mgdoses <12h apart, followed by 400mg weekly for 7 weeks)
5. Crowd restriction in hospital (both patients and staff)

Modification in operation theatre working
• Number of operational major-OTs wascurtailed to 8 from the existing 14 (with closure of one OT-block) with systematic staffrotation during the peak of COVID in Delhi.4
• All suspected in-patients kept in isolated rooms in a segregated area with PPE supply and linen stored in a trolleyoutside the door. Nurses and paramedics posted to isolation facility and non-critical patient care equipment (stethoscope, thermometer, sphygmomanometer) are dedicated to the patient and not allowed elsewhere.
• 12 air changes/hour and filtering of exhaust air is ensured.
• These areas are not a part of central air conditioning.
• Covid-19 Consent form=A new consent form has been designed wherein patient is informed that he/she stands the risk of infection.

We have finally learnt to live with corona (Second half of pandemic / unlocking phase)

Surgery has now been resumed in all 14 OTs to cater to the backlog of cancer patients. OT1 and OT 9 have been set up with negative pressure systems to specifically cater to any emergency surgery on COVID positive patients.
An institutional surgical safety checklist has been formulated (adaptation of WFSA checklist) and is being followed in letter and spirit. SOPs have been formulated to manage COVID patients.
COVID ward and Isolation unit =In compliance with the Delhi Government directive to reserve 30% hospital beds for COVID patients, a dedicated area (5th and 6th Floors; New D – Block) has been converted into COVID ward and Isolation unit for COVID-positive and COVID-result pending patients respectively.

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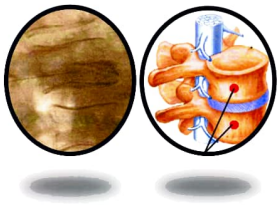
RAMI COMMUNICANS NERVE BLOCK FOR PAINFUL VERTEBRAL METASTATIC COMPRESSION FRACTURE: AN ADJUNCT TO VERTEBROPLASTY/KYPHOPLASTY

Vertebral metastasis is a common finding in tumors of the prostate, breast, lung and multiple myeloma. Lytic vertebral lesions and vertebrae fractures can lead to severe pain and in due course of time can result in fracture with anterior wedging of the vertebrae. It is a highly painful condition and is usually treated via conservative means or minimally invasive percutaneous vertebroplasty/ kyphoplasty. Conservative management includes use of braces, medications like NSAIDs, calcium supplements, vitamin D, bisphosphonates/denosumab, gabapentin and steroids. Generally, vertebral fractures heal within a few weeks or months with conservative treatments. A subset of patients continue to have pain and remain unresponsive to conservative therapy or report persistent pain despite percutaneous cement procedures like vertebroplasty.



Rami communicans nerve block is a procedure which can be used to relieve persistent severe pain as an adjunct to above mentioned procedures. This nerve block was based on the observation that gray ramus communicans, containing unmyelinated postganglionic fibers rejoin dorsal and ventral rami, distributing around vertebral body wall and course into anterior disc and thus possibly providing major sensory input for vertebral injuries.[1]

It is performed as a two-stage process and done bilaterally. Once the needle reaches the target point (AP view showing the needles to be hugging the middle to lower one third of the waist of the vertebral body; Lateral view depicting the needle tip in the middle of the vertebral body), final confirmation is done with dye under X-ray guidance. Thereafter, 0.5 to 1.0 ml of local anesthetic with steroid is injected. Radiofrequency ablation can also be done for prolonged effects. Preliminary reports from Oh and Shim suggest that RF thermocoagulation of rami communicans nerves provide significant pain relief as well as an improvement in body function for patients with vertebral body pain.[2]

To conclude, rami communicans nerve block is a useful and cost-effective adjuvant therapeutic modality in treatment of pain due to vertebral metastatic fractures. With the use of fluoroscopic guidance and expertise, it can be considered a safe option in selected patients where pain persists despite conservative treatment or following vertebroplasty.

1. Tae HS, Kim SD, Park JY, Kim SH, Lim DJ, Suh JK. Gray ramus communicans nerve block: a useful therapeutic adjuvant for painful osteoporotic vertebral compression fracture. J Korean Neurosurg Soc. 2003;34:505-8.
2. Oh WS, Shim JC. A randomized controlled trial of radiofrequency denervation of the ramus communicans nerve for chronic discogenic low back pain. Clin J Pain. 2004;20(1):55-60.

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