

Surgery During the Covid-19 Pandemic: Perioperative care in Italy

Host:

Mr James Kinross

Speakers:

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Dottor Andrea Mangini, Consultant Cardiac Surgeon, Luigi Sacco Hospital, Università Degli Studi Di Milano

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Current Context

- Since the last seminar three days previously, the UK has identified just under 2500 more cases, and at the time of the webinar the number of deaths due to coronavirus in the UK was 281. In comparison, at the time of the webinar Italy had 59,138 confirmed cases and 5,476 deaths from the virus.

The mission of the PanSurg collaborative is to collate and share best clinical practice by hearing from clinicians managing cases around the world. Today's webinar will hear from clinicians working in Genova and Milan.

Professor Danelli – Luigi Sacco Hospital, Milano

Organisation of healthcare services:

- Healthcare services are structured in hubs aiming to segregate patients into infectious disease hubs, and hubs dealing with other pathologies
- The Luigi Sacco Hospital is a centre for infectious disease in the North of Italy, and as such ambulances coming from surrounding territories do not come here.
- 2 surgeons are on call and ready for operating, with an additional surgeon also on call.
- Surgical teams have been divided - 1/3rd of total surgical staff is dedicated to managing covid patients, and the other 2/3^{ds} are getting on with operating and managing the surgical ward.
- Morale is being challenged by increasing numbers of patients coming in and the changes to surgeons' work.
- Staff should be screened routinely for covid, but only if symptomatic. Students should not be allowed to go into the department, doing e-learning instead learning and surgical residents should be available to help with this.

Should the UK be organising itself into hubs and thinking of ourselves as regions as has been done in Italy?

- Not easy to answer as healthcare service organisation differs between Italy and the UK. As Lombardy is central to the central organisation of healthcare services it was possible to do, but this is not the case in the UK.

Management of elective and emergency surgical patients

- Suggest surgical masks for non-covid patients, and FFP2 or 3 in covid positive patients
- Most severe cases of ARDS don't have surgery, they have not encountered a case yet that has required surgery.
- He emphasised need for separate pathways, elevators and teams for covid positive patients requiring surgery
- Every patient who comes to hospital who needs surgery has a lab test including nasal/pharyngeal sample and a chest x-ray. Patients who require emergency surgery and cannot wait for result are presumed covid positive.
- Acute appendicitis - manage with antibiotics and do CT scan. If abscess or perforation identified on CT proceed to surgery.

Elective operating

- Elective cancer surgery operations are performed here, at least 30 per week in 13 theatres at the hospital.
- A general manager decides which patients should have surgery, with some ongoing MDT input.
- Cancer patient are stratified into three groups:
 - A: require surgery within 2 weeks
 - B: require surgery after 2 weeks but within 2 months
 - C: patient who can wait 2 months for surgery.
- In hubs outside of Luigi Sacco Hospital there remains the possibility of operating on patients requiring post-operative ITU
- Laparoscopic surgery is still being performed in appropriate cases e.g. for patients with acute colitis requiring total colectomies. The procedure itself hasn't changed but the pre-operative patient work-up now includes chest x-rays and lab testing for coronavirus.

Dottor Andrea Mangini, Consultant Cardiac Surgeon, Luigi Sacco Hospital, Milan

Organisation of Healthcare Services

- Reorganisation was done in keeping with guidelines provided by the government, again setting up hubs serving different purposes.
- Services were reorganised to reduce demand for ICU beds by the cardiac surgery department, moving post-operative patients to another region to free up beds, ventilators, wards, doctors, nurses and other resources for covid patients.

- 17 out of 21 cardiac surgery departments were closed, with only 4 remaining. This was not an easy reorganisation, but thankfully guidelines were clear from local government.
- They are also trying to organise more ECMO facilities in hospitals but there aren't enough pumps, doctors and nurses to meet demand.
- The hospital has completely changed in the last week. All wards are being rebuilt, with new walls to separate covid from non-covid zones. Every time a new wall is built it has to be moved again because the numbers of patients coming in are unbelievable. The hospitals and government are trying to reduce the number of patients coming in.
- Dr Mangini now performs procedures in hospitals outside of his own, which are being kept free from virus.
- The team are split so half are kept for urgent procedures while the other half help with covid patients. Orthopaedic surgeons are managing patient on CPAP, ophthalmologists are working in A&E.

Management of acute cardiac conditions in this context:

- There have not been many emergency cardiac procedures performed recently, partly because patients are scared to come to hospital and therefore present late with advanced disease, making them unsuitable for surgical intervention.
- No noticeable differences in outcomes for patients undergoing cardiac surgery who are covid negative. No cardiac surgery has yet been performed on anyone in Milan who has tested positive as all have been too unwell.

Professional Body Consensus and Guideline Generation

- Individual hubs have had to make other decisions regarding service delivery which has been relatively easy in the short term but may lead to challenges in the long term. For example, new guidelines have been drawn up that mean all patients over the age of 80 will not be candidates for surgical management of acute aortic dissections due to unavailability of post-operative ICU beds, regardless of ASA status, which could lead to legal problems in the future.
 - Dr Mangini advised that any new guidelines consider future legal implications and protect against future litigation.
- There has been no formal input from national or European professional bodies on guidelines regarding management of surgical patients, and such guidelines have been drawn up on a local level, with each hub creating their own.
- Waiting for professional bodies such as European society of cardiac surgeons to develop new guidelines, which will be of paramount importance for the future.

Timing of "peak"

- The more stringent public measures were introduced 15 days ago and therefore by next weekend they will have a better idea of whether they are working or not. If it does not appear as though the measures have worked they will have a very big problem.
- Dr Mangini has some experience of the Chinese healthcare system after spending some time working there. Acknowledging differences between Italian and Chinese healthcare systems he thinks they are probably 30 days behind China. This said, he

predicts the peak in Italy will probably be in 20 days from now, rather than in a few days which would have been 15 days from the introduction of the more stringent public measures.

- Even last week in Italy lots of people were going out for fresh air, then other people see them and think they can do the same so more and more people go out, and this is a problem

Question regarding VASCON 1-5 classification:

- Don't know, hard to standardise anything
- Main advice is stop elective operations
- Try to reorganise hospital to reallocate resources to be ready for the peak of the curve, the timing of which is hard to predict.

If you knew then what you know now what advice would you give yourself?

- Stay at home, and convince all your patients, colleagues and families to do the same
- Start wearing masks as soon as possible. It will not protect you, but it will prevent you from spreading the virus to others and therefore start wearing them at all times at work, even when sitting in an office.
- Testing is important but for healthcare workers it would have to be done daily due to our activities and this would be unfeasible.
- When performing surgery gown up as if patient already infected
- Perform CT scan on all patients as it is more accurate than covid lab test. Patients have tested negative but had clear covid signs on CT, and it is difficult from a legal point of view how to manage such patients (should they be managed as covid or not?)
- Ward organisation:
 - Stop performing elective procedures on anyone who will need a post-op ICU bed so as to free up all the ICU beds possible.
 - They started with 10 beds in general ICU and 8 beds in cardiac ICU, now they have 50 ICU beds.
 - All wards will become some form of ICU, with all sorts of doctors managing patients.
 - Need wards for CPAP/NIV, but these wards are more dangerous than ICU so need to be completely closed with negative pressure systems
- Hospital buildings:
 - Hospitals have to be reconsidered from a structural perspective. Negative pressure is not usually available in normal wards, and hospitals are now being rebuilt so this can be provided.
 - Oxygen flow in hospitals is usually designed to provide average/medium flow, which insufficient pressure to provide oxygen required for all patients on CPAP, so oxygen pipes are also being rebuilt

Dr Lorenzo Ball, Department of Surgical Sciences and Integrated Diagnostics, Università Defli Di Genova

Summary of Current Situation

- The situation is rapidly evolving
- This region is smaller compared with Lombardy and started seeing cases approximately two weeks later, providing some additional time to reorganise its intensive care units (ICUs) and other services to receive covid19 patients. Nevertheless, they have seen a steep increase in both mild and severe cases of covid19, and therefore it is hard to describe the situation completely as it is rapidly evolving.

Local Leadership and Organisation of Services

- In this rapidly evolving situation the leadership and organisation of critical care beds has been clear.
- There is a regional coordinator for critical care beds required for emergencies, and the organisation of beds and services changes daily based on availability of and demand for beds, which is increasing locally and within the network that coordinates ICUs in the region (population of 1.5 million).
- The hospital used to have 24 beds in the ICU, which was shared between covid and non-covid patients. This was increased to 30 beds only for covid patients and within a week another 12 beds were created in theatres. Now they are creating a further 50 beds of intermediate care and ICU beds to provide non-invasive ventilation (NIV)
- All non-covid intensive care beds have been relocated to a separate division.

Testing Strategy

- This is another rapidly evolving situation.
- Previously Lombardy was treated like the single epidemic site in Italy and only those who were in contact with people from that region were considered at risk of having the virus. This perception changed when both asymptomatic and symptomatic cases started being identified in unexpected areas. In hospitals patients who had been admitted with respiratory failure were subsequently testing positive for the virus, as well as patients being admitted for other reasons e.g. surgical pathologies, who would develop symptom following admission and then test positive for the virus, either before or after surgery.
- Suggest to perform as many tests as possible, acknowledging that this is easy to say and harder to do. It is not just ICUs who must be ready for a huge influx of patients, but also laboratories must expand capacity for testing in terms of both equipment and staff.

Training Non-ICU Colleagues

- Initially they didn't think they would need to deliver formal training but now realising that some of the work will be done by non-intensivists.
- Older residents have been recruited to take on lower complexity cases and manage patients requiring NIV
- Emergency doctors (not trained in intensive care or anaesthetics in Italy) have in the last few days been receiving training for intubation and mechanical ventilation. Dr Ball has been asked to deliver a basic course for the doctors in the departments of cardiology and internal medicine in mechanical ventilation in anticipation of imminent resource reallocation.

- No current online, sharable content but they may move to this in the future.
- Emergency department doctors are doing some training involving simulation
- Training in person will become harder but some practical skills e.g. intubation will be impossible to teach through a webinar. It is more feasible that anaesthetists will continue performing the intubations with other doctors managing and adjusting the mechanical ventilation.

Ventilation of >1 patient per ventilator

- This has been done in mass casualty scenarios but sharing ventilators does not solve the problem of requiring more doctors and nurses, and risks radically reducing quality of care and increasing mortality rate therefore must be careful about simply increasing ICU bed numbers.
- If we want to improve chances of survival of intubated patients we must focus efforts on selected patients, otherwise we will not see any improvement.

[Mention of JAMA paper from US describing 90% mortality amongst intubated patients]

Opinion regarding higher mortality rate in Italy

- Acknowledging he is not an epidemiologist his feeling is that it is due to the underestimation of mild cases due to limited testing capacity.

Radiological findings of Covid Patients

- The team have recently retrospectively evaluated CT chests of ICU patients in the weeks before they started testing for covid and can now see findings which were consistent with covid.
- Some cases described in a paper published in *Radiology*
 - Ground glass opacity in close proximity to pleura is a common finding
 - Some completely asymptomatic patients have very significant findings in their CT, and these are the patient you must be more afraid of as they are brought into and contaminate clean theatres, posing risks to nurses and doctors.
 - Beware of the covid “negative” ward for the same reasons.

Covid Related Coagulopathy:

- Dr Ball advises looking at coagulation in surgical patients with caution as he has seen patients with severe respiratory failure are much more prone to have a coagulation dysfunction.
- Many of these patients are developing pulmonary emboli, and a large proportion of young patients are dying due to impairments in ventilation perfusion matching.
- In 5 patients who may have CTs for different indications, only one will be clinically suspected of having a PE but in rest of them they will find some form of perfusion alteration, from small PE's to major obstructions of pulmonary vessels.
- He advises:
 - Look at d-dimers and coagulation in all covid patients
 - Early thromboprophylaxis with heparin
 - Please spare some energy to think and reflect on what you're doing and why, and don't forget about research.

Takeaway sum up by Mr James Kinross

- Need to move to a hub system in UK
- Need to think about fundamentals e.g. oxygen supply and shouldn't not misunderstand importance of training our people with high quality educational program
- We need to develop our own guidelines for elective and acute surgical disease for their management in the short term, considering future implications.
- Protect our staff in terms of testing but also with appropriate PPE.
- Don't forget about research