

## Role of Imaging in Surgery

**Type:** Editorial Note

**Received:** July 26, 2024

**Published:** October 03, 2024

**Citation:**

Prabuddha J Das. "Role of Imaging in Surgery". PriMera Scientific Surgical Research and Practice 4.4 (2024): 39-40.

**Copyright:**

© 2024 Prabuddha J Das.  
This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Prabuddha J Das\***

*MBBS, DNB, FRCR, MNAMS Administrative Head, Dept of Radiology, Kamineni Hospital, LB Nagar, Hyderabad, India*

**\*Corresponding Author:** Prabuddha J Das, MBBS, DNB, FRCR, MNAMS Administrative Head, Dept of Radiology, Kamineni Hospital, LB Nagar, Hyderabad, India.

There was a time when a patient would get a skull surgery to remove a sellar tumor if the person presented with consistent symptoms and a skull x-ray revealed an enlarged sella. Surgeons discovered that a large proportion of the patients operated upon had actually no tumor and so the term empty sella came into medical dictionary. Radiology has advanced with time and in today's world surgeons have a host of imaging solutions to assist them before, during and after any surgery.

There are a host of imaging modalities available today for diagnosis of diseases, including ultrasonography (which includes endoscopic ultrasonography), X-ray, CT, MRI, PET CT and PET MRI, with modifications and advances being made in these modalities rapidly over the years.

So once imaging helps in diagnosing a pathological process like a tumor in a patient, there is an option in today's world to do preoperative imaging to plan the surgery. The surgeon can decide the technique, the approach, plan the surgery and may even get to look at software generated images of outcome of the surgery before the actual surgery. The surgeons can also get intra-op imaging assistance, where they can get imaging of the field of operation live during the surgery, or they can map a 3D CT or MRI image onto the patient, and conduct the operation. These intra-op imaging solutions are becoming popular in neurosurgery, oncosurgery, cardiology, ENT and orthopaedics. For intra operative imaging, a host of imaging devices are being used, including ultrasonography machines, simple x-ray machines, C-arms and more complex 3D scanners, CT and MRI machines.

More advanced solutions employ augmented reality and computer vision to guide the surgeon live during the operation, help identify the structures in the operative field and track the surgical instruments and patient's anatomy live during the procedure, thus making the operation safer, more precise, with fewer complications. Imaging helps in modifying a surgery after it is done, for example a surgeon can go in and redo the surgery with wider excision if there is a residual tumor found on an intraoperative MRI scan.

Then there is post op imaging available to monitor the progress of a patient after a surgery so that immediate post-operative complications can be treated or avoided; and for follow up of patients if required.

In this age, surgeons need to make themselves aware of the advances in various imaging modalities and augmented reality solutions that can help them in their practice, and the pros and cons of using them. Also they need to assess the cost versus benefit to the patient and hospital and decide if it is worth procuring the same.

With on-going research and collaborations in the field of imaging, artificial intelligence and augmented reality, there are problems emerging in designing and standardizing the equipments or solutions for the operating room, and integrating them to the actual surgical procedure. We can expect a lot of changes in the way surgeries are conducted in the future and we look forward to solutions that will be available in all big and small centres, so that people across the world can benefit from these advances.