



# NEWS LETTER

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## ROLE OF DIGITAL TECHNOLOGY IN IMPROVING HEALTH CARE DELIVERY AND CLINICAL CARE

In recent years, the healthcare industry has undergone a digital revolution, with technology reshaping how hospitals operate and deliver care. The integration of digital health solutions in hospitals has brought about significant advancements in patient care, data management, and operational efficiency. This has a direct transformative impact on the eventual quality of clinical care being delivered in a hospital.

Digital health technologies have revolutionized patient care, enabling hospitals to offer more personalized and efficient services. Telemedicine, for instance, allows healthcare providers to conduct remote consultations with patients, extending medical access to individuals in remote areas and reducing the burden on in-person visits. Furthermore, wearable devices and health apps enable patients to monitor their health continuously, promoting proactive self-care and early detection of potential health issues.

Digital health solutions have streamlined hospital workflows and administrative tasks. Electronic Health Records (EHRs) are beginning to replace traditional paper-based systems, making patient information easily accessible to authorized healthcare professionals. This efficient data management improves collaboration among care teams, enhances communication, and reduces the likelihood of medical errors.

### Digital Health Applications include:

#### 1. Hospital Management Information System:

HMIS, short for Hospital Management Information System, is a software solution designed to support hospital's administrative and financial needs and enhance operational efficiency in hospitals. It offers various features like patient record management, appointment scheduling, billing, and inventory control.

#### 2. Electronic Health Records:

EHR organizes medical records, charts, test results, medications, and more. The main goal of EHRs is to give healthcare professionals quick access to critical patient information, leading to better decision-making, improved coordination of care, and enhanced patient safety. It broadly includes comprehensive Record Management, Interoperability and Information Sharing and Decision Support and Analytics.

#### 3. Telemedicine:

It leverages digital platforms and communication tools to connect healthcare providers with patients, regardless of their physical location. Virtual Consultations, followup care and monitoring and emergency care, second opinion service and enhanced patient monitoring.

#### 4. Patient Portals:

Recognizing the importance of empowering consumers and patients, there is a global consensus that grants them complete access to their health information. This principle is also the foundation of the Government of India's Ayushman Bharat Digital Mission (ABDM).

## NATIONAL-LEVEL E-GOVERNANCE INITIATIVES IN HEALTHCARE

#### 1. AYUSHMAN BHARAT DIGITAL MISSION - ABDM:

ABHA number - Just like an Aadhar number, ABHA is a unique health ID. Every citizen of India can choose to create one. Healthcare Professionals Registry (HPR) is a repository of all healthcare professionals involved in delivery of healthcare services across both modern and traditional systems of medicine. Health Facility Registry (HFR) is a repository of health facilities of the nation across different systems of medicine.

#### 2. E-HOSPITAL:

The e-Hospital application is an application for Hospital Management Information System. This helps with the digitization of internal workflows and processes of hospitals. The e-Hospital system is a onestop solution which helps in connecting patients, hospitals, and doctors on a single digital platform.

#### 3. E-SANJEEVANI:

E-Sanjeevani is the National Telemedicine Service of India, implemented by the Ministry of Health and Family Welfare. It is the world's largest telemedicine initiative in primary healthcare, serving lakhs of patients through Health & Wellness Centres and online OPDs.

#### 4. E-SUSHRUT:

E-Sushrut is another example of a Hospital Management Information System (HMIS). E-Sushrut is deployed in over multiple thousands of hospitals across India including all AIIMS hospitals across the country.

( Continue on 2<sup>nd</sup> Page )

## 5. NIKSHAY:

While the world has set a target to eliminate TB by 2030, India has set an ambitious target to eliminate the same by 2025! This is possible only if the Government can track every case in the country, NIKSHAY is the web enabled patient management system for TB control under the National Tuberculosis Elimination Programme (NTEP). It also functions as the National TB Surveillance System and enables reporting of various surveillance data to the Government of India.

## 6. PERSONAL DIGITAL DATA PROTECTION ACT 2023:

An Act to provide for the processing of digital personal data in a manner that recognizes both the right of individuals to protect their personal data and the need to process such personal data for lawful purposes and for matters connected therewith or incidental thereto. The DPDP Act governs the processing of digital personal data within India in two scenarios: (i) when such data is collected from data principals in digital format; or (ii) when initially collected in non-digital form and subsequently digitized. Thus, the DPDP Act shall not apply to processing of personal data in non-digitized form. It

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is clearer and narrower than the 2022 Bill, which did not apply to 'non-automated' processing and 'offline' data.

### NABH Digital Health Standards at RGCIRC:

Digital Health Accreditation by NABH is designed to be a rigorous and comprehensive process that evaluates and certifies the digital tools, systems, and platforms used in healthcare. Accreditation ensures that these technologies meet stringent standards, adhere to regulatory requirements, and prioritize the protection of sensitive patient data.

The NABH DHS standards were launched in August 2023 and has 3 levels i.e. silver, gold and platinum for which hospitals can apply, depending on their digital maturity, adoption and applications. More than 100 hospitals across the country have already applied under the program. RGC applied for Gold level accreditation in November 2023. The final assessment was done on 3rd and 4th February 2024, which went off well. This comes as one more digital health initiative taken by the hospital.

### CO-AUTHOR

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## O-ARM IN SPINE SURGERY

O-Arm has revolutionized the spine surgery operative treatment, particularly spinal instrumentation.

The O-Arm represents a novel intraoperative imaging modality that overcomes many of the limitations of conventional fluoroscopy. It comprises a mobile telescoping gantry that is designed to collect images throughout a 360° arc. The robotically controlled telescoping gantry is designed to acquire a series of two-dimensional images during an orbital scan that are processed to yield high-quality, multiplanar reconstructions which are displayed on a mobile viewing station where they may be manipulated by the surgeon. When linked to a navigation system, the O-Arm may also serve as a platform for image-guided procedures. One can put a navigated screw in pedicles with perfect accuracy avoiding the spinal canal and neural foramina. It is particularly important in pedicle screw placement in cervical spine where the pedicles are thin and delicate and vertebral artery, cord and roots need to be safeguarded.

Since all the images are acquired at one time, the duration of radiation exposure to the patient, surgeon and OT staff is also lesser when compared to C-arm. Operative duration is also reduced by obviating the need of multiple C-arms shoots.

Following is an illustrative example of minimally invasive spinal surgery using O-arm and navigation guidance recently performed in our institution.

A 74 years old gentleman, a case of metastatic renal cell carcinoma presented with excruciating mechanical back pain, which severely restricted all his movements-suggestive of spinal instability. On imaging, he was found to have D10

vertebral mild central collapse with epidural extension (bilsky grade1c).

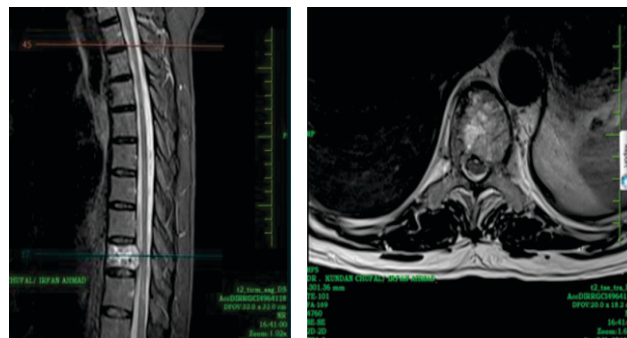


Fig. 1(a)

Fig. 1(b)

Figure 1(a) Sagittal and 1(b) Axial pre-operative MRI showing D10 vertebral collapse with bilsky grade 1c compression.

In the setting of severe pain due to instability and absence of significant epidural spinal cord compression, the aim of the surgery was to stabilize this spinal segment without a need of decompression. Accordingly, O-arm and navigation guided percutaneous pedicle screws and rod fixation was performed. Apart from reduced operative time and blood loss the distinct advantage of minimally invasive procedure in this setting is avoidance of extensive dissection of paravertebral muscles which leads to their denervation and atrophy in the long term which would greatly hamper ambulation in this already compromised elderly gentleman.

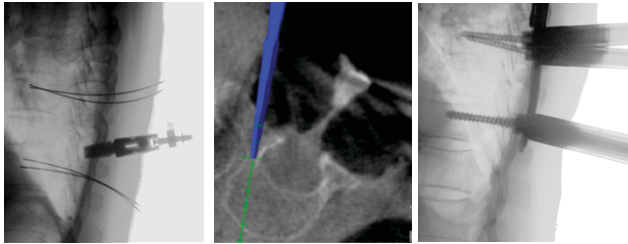


Fig. 2(a)

Fig. 2(b)

Fig. 2(c)

Figure 2(a) Percutaneously cannulated D9 and D11 pedicles with guide wires insitu; 2(b) Navigation guided drilling of the narrow pedicles; 2(c) Bilateral D9 and D11 screws with rods

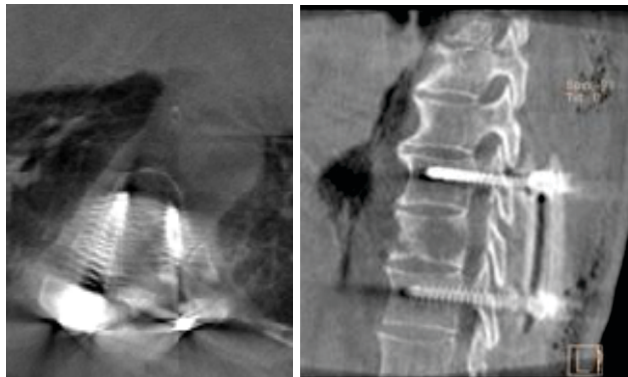


Fig. 3(a)

Fig. 3(b)

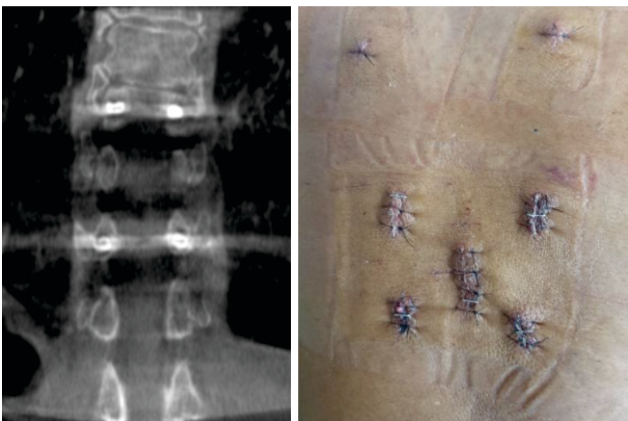


Fig. 3(c)

Fig. 3(d)

Figure 3(a), (b) and (c) - O-arm derived axial, sagittal and coronal images showing accurate placement of implants. 3(d) small stab incisions after closure.

The patient reported significant pain relief immediately after recovering from GA and could stand up and start walking the same evening. Significant number of patients with malignancies develop vertebral metastases with a looming threat to instability and neural element compression rendering the patient bed bound for the remainder of his life and severely affecting QOL. Having O-arm in armamentarium boosts the neurosurgeons capability to perform efficient, safe and minimally invasive surgery in such multi-morbid patients groups and improve the ambulation potential and quality of life.

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## A TRUE SIKH!



Sardar Amrit Singh ji, a 35-year-old businessman from Punjab who works for Jhajjz Transport, is a perfect example of kindness and selflessness. He registered as a Stem Cell Voluntary Donor with NGO, GeneBandhu Stem Cell Registry, Delhi in 2016 at Gurudwara Fatehgarh Sahib, Punjab. He had no idea that his deed of generosity would save Life of a six-year-old Thalassemia Major child who is presently admitted at Rajiv Gandhi Cancer Institute & Research Center, New Delhi for Allogeneic Bone Marrow Transplant as the only lifesaving curative treatment.

Our patient is a young girl suffering from Thalassemia Major, a genetic blood disorder that requires weekly blood transfusions in every 10-15 days. The only curative treatment is an Allogeneic Bone marrow transplant where a genetic match can donate normal healthy bone marrow to the patient and give her a new life. Unfortunately, she did not have a 100 % HLA matched donor in the family so we did a Matched Unrelated Donor Search in March 2023 for this patient in National and International Stem Cell Registries and found many 100 % HLA matching donors in Italy, USA, China and India. Our experience of a bone marrow donor available for our patient was almost negligible in Indian registries. The cost of International stem cell registries was way beyond the reach of patient family still in a hope to save their daughter's life, parents wished to proceed with any donor who is available for bone marrow donation. In September 2023, Indian registry Genebandhu came into contact with this donor and we requested bone marrow as our preference for this patient.

GeneBandhu Stem Cell Registry sent us an email that Sardar Amrit Singh was a complete match to our patient. The Indian Registry contacted him in September 23. Sardar Amrit Singh took some time but promised to save that one precious life. The devotion of Sardar Amrit Singh is way beyond words. He was not related to the patient neither to the family but a complete HLA match to this patient and only matched donor in India. Many Voluntary donors resist visiting the hospital after knowing that they have to donate blood to any patient and this donor was willing for bone marrow donation which is an OT procedure involving general anesthesia and requires admission in the hospital for 2-3 days. Sardar Amrit Singh, a true Sikh and a warrior who believes in "Ek Onkar that there is only one God or one Creator" underwent the process and was able to donate his bone marrow on December 29, 2023 for our patient. He recovered well and moved to his everyday Chores.

Sardar Amrit Singh's selfless act of donating bone marrow on December 29, 2023, exemplifies the extraordinary lengths some individuals go to in order to save lives. His actions serve as a powerful example of heroism and compassion for humanity.



# RGCON 2024

22<sup>ND</sup> ANNUAL INTERNATIONAL CONFERENCE

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15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup> March 2024

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