

## Review Article

# Institutional Guidelines for Safe Surgery in HIV Patients in a Government Medical College

Ramdip Ray<sup>1</sup>, Shamita Chatterjee<sup>2</sup>

Effective Public Health measures have helped to reduce both the number of new HIV infections as well as deaths due to AIDS. However, over 25% of HIV positive individuals need surgical care sometime during their lifespan. Exposure to body fluid carries a risk of HIV transmission from patient to Operation Theatre (OT) personnel during surgery. A coordinated team approach with strict adherence to Institutional Guidelines is required to ensure safety of patient and all OT personnel during surgery on HIV patients.

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**Key words :** Surgery in HIV patients, Universal precaution, Institutional guidelines.

**H**IV infection is an ongoing epidemic in India, even though it is slowing down<sup>1</sup>. Still, the prevalence among adults is estimated to be 0.2% in 2017<sup>1</sup>, which translates to approximately 21.40 Lakh individuals. Effective Public Health measures have helped to reduce both the number of new HIV infections as well as deaths due to AIDS. This, however, means that there are a significant number of HIV positive individuals who can hope for a reasonable life span not significantly different from normal population. These individuals would therefore need surgical care sometime during their lifespan, both for acute and chronic conditions.

Approximately 25% of HIV / AIDS patients undergo at least one surgery in their lifetime<sup>2</sup>. Patients with HIV infection only, are at a lower risk and less contagious than patients with AIDS. The pre-operative physiological status and the magnitude of the operative procedure are predictors of postoperative outcome. The surgical magnitude remaining the same in both HIV positive and negative patients, it is the pre-operative physiological status that determines the final outcome.

Healthcare workers and Hospital personnel would need to treat such individuals with the care and respect that is guaranteed by law, while taking suitable precautions to protect them as well as other non-HIV persons present in the Hospital at that time.

Blood and body fluids of HIV positive patients must be considered potentially hazardous. Exposure to body fluids does carry a risk of HIV transmission from patient

### Editor's Comment :

- Effective Public Health measures have helped to reduce both the number of new HIV infections as well as deaths due to AIDS.
- However, over 25% of HIV positive individuals need surgical care sometime during their lifespan.
- Exposure to body fluid carries a risk of HIV transmission from patient to OT personnel during surgery.
- Coordinated team approach with strict adherence to Institutional Guidelines required to ensure safety of patient and all OT personnel during surgery on HIV patients.

to Operation Theatre (OT) personnel, even though the risk of transmission is extremely low<sup>3</sup>. The risk increases manifold in case of penetrating needle stick injury with a hollow needle (as compared to a solid needle), deep soft tissue penetration, presence of blood on the needle and prolonged exposure due to presence of blood inside the glove. Risk also increases in case of patients with early viraemia or advanced AIDS.

In routine practice, health care workers are likely to harbor reservations and fears while delivering surgical services to these patients. However, to achieve an uneventful, incident free surgical procedure in HIV positive individuals it should be conducted by a well co-ordinated team in a calm unhurried manner with concern for the patient & for each other, while paying meticulous attention to details.

The principles of safe surgery in HIV are essentially the principles of sound surgical practice, which are applicable to all patients. However, if possible, elective operations in HIV positive patients may be postponed, with the aim of starting the patient on anti-retroviral medication, so that the surgery can be performed on a healthier patient with a lower viral load, a higher CD4 count and Hb level of 10gm/dl or above<sup>2</sup>. This is advantageous for both patient and surgeon.

<sup>1</sup>MBBS, MS (General Surgery), MRCS, Senior Consultant, Liver Transplant & HPB Surgery, Apollo Gleneagles Hospital, Kolkata 700054

<sup>2</sup>MBBS, MS (General Surgery), FMAS, FAIS, Professor, Department of General Surgery, IPGME&R and SSKM Hospital, Kolkata 700020 and Corresponding Author

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The following guidelines are recommended for all Operation Theatre (OT) personnel for protecting both patients and fellow staff.

#### General Measures :

- Basic hygienic practices with regular hand washing.
- Protection of mucous membrane of eyes, mouth and nose from blood splashes.
- Safe disposal of contaminated waste.

#### Skin Wounds / Abrasions / Cuts / Dermatitis / Eczema on Surgical Personnel :

- Intact skin and mucous membranes are an important defense against HIV; existing wounds and skin lesions should be covered with waterproof dressing.
- Wounds / skin lesions over the hands / forearms should be covered with sterile dressing.

#### Proper OT attire (Fig 1) :

- Full face visors or goggles / glasses with sides covered are recommended. Ordinary prescription spectacles may not provide sufficient protection.
- Closed- toe, non-slip boots with leggings or gumboots to be worn; the gown should extend below the upper level of the gumboots / leggings.
- Plastic disposable apron to be worn beneath the gown.
- Disposable gowns with low permeability to blood / body fluids or fluid repellent gowns to be used.
- Double gloving is mandatory as it decreases the chance of hand contamination and needle pricks. Gloves need to be changed if the outer pair gets damaged.
- Customized forearm guard may be made using the upper part of the gloves, after cutting off the fingers.

#### General OT Practices :

The highest level of theatre discipline should be maintained:

- In experienced personnel should be excluded from the theatre. Training responsibilities in a teaching hospital can be achieved by demonstrating the principles of safe surgery when operating on other low risk patients<sup>4</sup>.
- No extra spectators should be present in the OT.
- Minimum conversation should be ensured inside the OT, ie, no unnecessary instructions, no jokes, no shouting across the table.
- Restricted staff movements in and out of the OT should be ensured when the surgical procedure is on.

- All unnecessary equipment / furniture should be removed from the OT before the operation to reduce the amount of decontamination required after the procedure.

#### Anaesthesia :

- Anaesthetists should wear complete protective OT gear like the surgeons.
- Protective eyewear is of particular importance during intubation and extubation.
- Anaesthesia machine should be stripped of all but essential equipment before surgery commences.
- Use of heat & moisture exchange filters in the circuit may be considered.
- Disposable circuitry may be used but are by no means essential.

- Screen at the head end should be made mandatory (Fig 2).

- After surgery, components of the circuit may be decontaminated by autoclaving, low temperature steam, or by immersion in 2 % glutaraldehyde (Cidex) for 12 hours.

#### Handling Sharps :

Penetrating needle-stick injury occurring with a hollow needle has a higher risk of seroconversion (0.36%) as opposed to a solid needle (0%). Hence minimal handling of sharps is preferred.

- Avoid use of sharps whenever possible: consider use of diathermy or scissors instead of scalpels and staplers instead of needles, where appropriate.
- Ensure safe handling and disposal of sharps. Mounting or removal of scalpel blades by hand is not permitted. Use an instrument for this purpose (Fig 3).
- Excess suture lengths should be snipped off from the atraumatic needles before disposal.
- After surgery, all needles / scalpel blades should be placed carefully in a plastic container (the body of a large syringe may suffice!), filled with bleaching solution or 2% Glutaraldehyde before including them among other items meant for safe disposal.

#### Surgical Technique :

- Pre-op shaving should be avoided: use epilatory creams if necessary.
- Disposable instruments should be used



Fig 1 — Attire of OT personnel during surgery of HIV positive patients

wherever possible / available.

- Incisions need to be adequate and well planned (eg, midline incisions bleed less).

- Ensure neutral area transfer of sharps using a kidney dish. No direct hand to hand transfer of scalpel / needles should be done (Fig 4).

- Only one hand should move at a time within the operative field, while all others should remain passive.

- Suction bottles should be half filled with 2% Glutaraldehyde before surgery.

- Stiff sutures like Polypropylene should be avoided. The needle, at times, tends to stand up and swing dangerously in mid-air towards the end of a continuous suture.

- Skin staplers should be used whenever possible.

- While unnecessary and excess instruments should not be laid out on the instrument trolley, avoid using fewer instruments than usual because of sterilization concerns: a spare haemostat may not be available when an artery spurts!

- Closed drainage is preferred over an open drain.

#### Blood Spills :

- If heavy blood loss is expected, OT tables and attachments should be covered with plastic sheets.

- In case of blood spills, a mop soaked in a bleaching solution with available chlorine of 10,000 ppm, should be placed over the area before cleaning the spill. It is useless to sprinkle dry bleaching powder over the blood spill.

#### Laparoscopy :

- Whenever possible minimally invasive, endoscopic surgical techniques should be employed, this reduces the risk of contamination by blood and body fluids.

- Minimal access surgery is safe in patients with HIV<sup>5</sup>. There is no evidence that HIV is transmitted by aerosols during Laparoscopy. However, instead of 'letting out' the pneumoperitoneum by withdrawing the ports suddenly (blood-mixed carbon dioxide comes out at a force!), the insufflator should be stopped and the pneumoperitoneum sucked out before withdrawing the ports gently.

#### After Surgery :

- It is not necessary to place high risk patients at the end of the operating list, though before the next



Fig 2 — Screen at the head end



Fig 3 — Mounting or removal of scalpel blades

operation the theatre floor should be disinfected with bleaching powder solution.

- A wound dressing with an impervious outer covering should be used so that there is no seepage of any wound exudate.

- Skin should be cleaned to ensure that no blood remains on the patient's body after completion of surgery.

- It should be ensured that the patient is wearing a clean gown when being sent back to ward after surgery.



Fig 4 — Neutral area transfer of sharps using a kidney dish



- After the operation all drapes / gowns / gloves / disposable instruments should be sealed in a plastic bag. Though disposable drapes and gowns are preferred, if reusable ones are used, they should be labeled as 'infected linen' and send to the laundry.

- Specimens and its accompanying forms should be labeled as 'Biohazard'.

- Instruments should be sent to Central Sterile Supply Department (CSSD) with a 'Biohazard' label. All reusable instruments should be immersed (after dismantling, if required) in bleaching solution or 2% Glutaraldehyde for 1 hour before being taken up for cleaning / washing / sterilization. Hollow instruments / tubes / endoscopes / trocars are perhaps best kept immersed for 12 hours, in the absence of concrete guidelines about sterilisation of such instruments.

#### After an Injury / Mucosal Splash :

- The surgeon should stop operating as soon as the operating conditions allows, remove gloves and wash the area with soap & water or surgical detergent scrub.

- The wound should be encouraged to bleed, cleansed with alcohol-based wipes and covered with a sterile dressing before re-gloving and completing the operation (unless someone else can take over).

- For mucous membrane exposure, the area should be copiously irrigated with water.

- Full Postexposure Prophylaxis (PEP) protocol should be commenced ideally within 2 hours and definitely within 72 hours of the injury / exposure.

- Counseling and psychological support of the exposed personnel.

- Exposure should be documented and reported to the HIV/AIDS clinic mandatorily on the same / next day.

- Baseline HIV antibody should be tested and PEP continued for 28 days.

- Follow-up HIV antibody testing has to be done at 6 weeks, 12 weeks and 6 months.

#### CONCLUSION

Surgery for patients with HIV/ AIDS should not be a panacea for the treating surgeon and the entire surgical team. A coordinated team approach is needed with proper pre-operative preparation to ensure a systematic, step wise approach which is duly practiced even during operating on non-HIV / AIDS individuals so that individual team members are aware and are accustomed to their roles during such situations. Training of all involved personnel is also necessary so that the correct response is made in a professional manner in the event of an adverse event / incident. This would ensure honoring the commitment of the Medical profession towards such individuals and thus maintain the spirit of the enacted law as well.

**Disclaimer :** These guidelines are developed partly from a review of published literature and partly as a result of the 'felt needs' of surgical personnel involved in operations on HIV positive patients. However, these guidelines are still in the process of being validated and are no substitute for the judgement / discretion of the individual doctor / surgeon.

**Conflict of interest :** None

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