

Review Article

SURGICAL PRECAUTIONS IN HIV PATIENTS – A REVIEW

Amit Verma *, Akshay Nerlekar **, H. V. Nerlekar ***, Ankur Gopendra Das *, Abhinav Kesarwani *

* Resident, Department of Surgery, Krishna Institute of Medical Science, Karad, Dist.-Satara, Maharashtra.

** Senior Resident, Department of Surgery, Krishna Institute of Medical Science, Karad, Dist.-Satara, Maharashtra

*** Associate Professor, Department of Surgery, Krishna Institute of Medical Science, Karad, Dist.-Satara, Maharashtra

ABSTRACT

Though surgeons are not primarily responsible for the treatment of patients with human immunodeficiency virus (HIV) infection, the disease influences the performance and outcome of surgery. Surgeons may be called upon to operate for the diagnosis of an infection, for an unrelated condition, or for one of the surgical complications of acquired immunodeficiency syndrome (AIDS). This article reviews in brief the etiology, pathogenesis, and natural history of HIV and AIDS, the signs and symptoms which may help in recognizing HIV disease especially in emergency situations, the clinical presentations from a surgical point of view and their management, controversial issues related to the management of AIDS patients, and finally the guidelines for the precautions to be taken to reduce the potential risk of transmission of infection from patient to a health care workers and the postexposure prophylaxis.

KEYWORDS: HIV, surgical, AIDS, surgeons, precautions

INTRODUCTION

A large population of HIV/AIDS patients present to the surgeon with a variety different of surgical pathologies: these may be familiar or unfamiliar to the surgeon, creating either a dilemma in management or a delay in diagnosis and treatment. Unusual surgical pathologies may present in the background of HIV/AIDS, and surgeons ought to be vigilant.¹ A large body of research on the different aspects of the management of these patients exists, from the experience of surgeons in different surgical

disciplines. However, these are scattered, and have not been previously analysed and collected together; further, misgivings and misunderstandings from the pre-HAART era still exist, as to what should be done for these patients.²⁻⁴ This review examines the impact of HIV/AIDS on the practice of surgery on the global scene, with an overview of important surgical milestones, as well as broad overviews of common surgical pathologies in the different disciplines, and provides a summary of current surgical care of the HIV/AIDS patient.

SURGERY AND HIV/AIDS

Surgery in HIV infected patients

The risk of HIV transmission from patient to the surgeon depends on the prevalence HIV/AIDS in the population served by the surgeon, the frequency of accidental injuries with exposure to infected blood or body fluids, availability of HIV tests and post-exposure prophylaxis in the institution in which the surgeon works, and importantly, compliance of the surgeon to post-exposure prophylaxis (PEP).^{5,6} A study showed the scarcity of adequate safe surgical supply as a major obstacle to African surgeons' safety. Perception of 'time-wasting' with needle stick injury protocols and the subsequent disruption of operating schedules, and an ad hoc assessment of the injury as insignificant were noted as the biggest challenges to the prevention of occupational transmission. The three universal precautions are: double-gloving, use of face shields, and hands-free technique.⁷ The frequency of cutaneous injury with sharp instruments in surgical procedures is between 1.5% and 15%, with an average risk of five injuries per 100

procedures. While the estimated risk of exposure from a single bore needle stick injury is 0.3%, that from a suture needle is significantly smaller; no seroconversions have been reported in surgeons after a suture injury needle stick. Needle stick injuries of healthcare workers with exposure to blood of patients on HAART, while on the one hand low-risk because of the low or absent viral loads, may on the other hand pose a significant risk for the transmission of drug resistant HIV, with the danger of seroconversion in the HCW, even after PEP compliance.⁸⁻¹⁰ A review of reported occupational exposures to HIV infected blood in Brazil between 1984 and 2004 revealed a total of four seroconversions; two of these despite using post-exposure prophylaxis. The actual number of exposures is much higher than those reported/recorded, as many HCW find that the post-exposure protocols interfere with their schedules, or residents and other junior doctors manage their own post-exposure care, rather than reporting it. Non-compliance with needle stick injury protocols is commonest amongst senior surgeons.¹¹⁻¹⁶ Of an estimated three million HCW percutaneous exposures to blood-borne pathogens, 170,000 are to HIV, with approximately 500 seroconversions annually; 90% of these occur in the developing world. As of December 2005, globally, there were 106 documented cases of specific occupational exposures that resulted in HIV transmission and seroconversion of the HCW. A further 238 seroconversions in HCW may have resulted from occupational exposures, a total of 344 seroconversions; 5% of these were surgeons.^{17,18} As of March 2005, there were 26 PEP failures. Eight of 57 HCW who seroconverted after an occupational exposure to HIV despite having used PEP; only two of these incidences occurred in the setting of an operating room. Further, six surgeons thought to have seroconverted after occupational exposure did not either have identified index cases, or their pre-exposure status was unknown. Seroconversion following occupational exposure even after post-exposure prophylaxis, though rare, is an unfortunate reality. There are fortunately no reported seroconversions after a suture needle injury to date. Since the 57 HCW seroconversions were reported in 2001 by the CDC, only one seroconversion has been reported in the USA.¹⁹ Double gloving substantially reduces the risk of percutaneous

contact with blood from a perforation. In a study of 66 consecutive surgical procedures, of 32 glove perforations in the double-gloving group, 22 were in the outer glove, 10 in the inner glove, and 4 in both gloves. Most glove perforations (83.3%) had gone unnoticed. Bennett et al estimated that double-gloving reduced the size of the blood inoculum in a normal phlebotomy needle to less than 5%, effectively reducing the risk of transmission from 0.3% to 0.009%. The benefits of double-gloving far outweigh the perceived loss of tactile sensation and dexterity. Additionally, the 'handsfree' technique of handling sharps has been reported to reduce sharps injuries and percutaneous contamination by up to 60%. Lefebvre et al found that while a single glove removed more than 97% of contaminant off a tapered needle, two gloves were needed to remove about 91% of contaminant from a cutting suture needle. Three gloves offered the same protection as did two.²⁰ The discussion on perioperative HIV testing in surgery has gone full circle – from an initial push because of the need to protect healthcare workers and exclude high risk patients with potentially poor outcomes, through a period when this was viewed as an unnecessary process that may have been used to unjustly segregate and exclude HIV positive patients from optimal care, to a time when official healthcare organs such as the CDC recognize perioperative HIV testing as an important and necessary part of blood work up, that is potentially protective for the patient. The consequences of undiagnosed HIV infection are deadly and pose setbacks to public health care.²¹

Risk to the patient

While a theoretical risk of surgeon-to-patient transmission exists, the only such reported case is that of a dentist who infected five of his patients. There was also a documented possible transmission from an HIV infected orthopaedic surgeon. The calculated risk of transmission is less than 1 in 41,667 or 1 in 416,670. Thus the actual risk for the patient is minimal. Nevertheless, the debate on whether or not an HIV positive surgeon should reveal their serostatus to all potential patients continues to rage, and is unlikely to be resolved any time soon.²²

Outcomes

Studies have shown that CD4+ counts can be reliably used to predict the outcomes of patients with HIV/AIDS after surgical procedures. HIV infection destroys the immune system: only 12% of patients have a CD4 cell count greater than 500 cells/ μ L, while 50% have a CD4 cell count below 200 cells/ μ L. Some surgical disciplines have had conflicting conclusions on the use of the CD4+ counts as a surrogate marker for clinical outcomes.²³ With regard to the gastro-intestinal tract some studies have suggested that CD4+ counts are predictive of outcomes, while some found no relationship. Viral load has also been used as a marker, but is not as well established. The lower the CD4+ count, the higher the rates of post-operative infective complications, increased length of hospital stay, and mortality. While urgent surgical operations have been associated with increased morbidity and mortality, the overall postoperative mortality in HIV/AIDS is between 18% and 48%.²⁴ Patients undergoing oral or transoral surgery have a significantly increased incidence of wound sepsis when compared with those undergoing trans-dermal surgery. Cacala et al in a prospective review of 350 patients in a high HIV prevalence environment concluded that HIV infection did not influence the outcome of general surgical admissions.²⁵ CD4 counts did not influence in-hospital outcomes in their cohort of patients, findings that concurred with those of a study in a similar environment. HIV-infected or exposed pediatric patients may have a higher rate of complications, with poor wound healing and breakdown of reconstructive procedures, although other variables such as the need for emergent surgery, malnutrition and comorbidities including respiratory infections in these children contribute significantly to their poor outcome, besides the HIV infection. Karpelowsky et al found a higher morbidity and mortality amongst HIV positive or exposed children undergoing surgery when compared to HIV negative children. Nevertheless, they noted that life-saving urgent or elective surgery should not be denied children on the basis of their HIV status.²⁶

CONCLUSION

The HIV/AIDS pandemic continues to present

significant challenges in the care of the patient in totality. The use of HAART has led to an increase in the survival of HIV/AIDS patients, turning this previously fatal disease into a chronic illness. As a result, malignancy, chronic illnesses, and other emerging surgical diseases presenting in these patients, have continued to challenge the ingenuity of the surgical fraternity. Implant surgery, oncology and organ transplantation are fields in HIV/AIDS in which significant progress has been made, and continues to evolve.

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