

Should HBV or HCV positive surgeons refrain from operating

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Viruses like hepatitis B, C and HIV spread by blood and blood fluids. Health care professionals including surgeons and all those who perform exposure-prone procedures are at risk of contracting these blood-borne viruses, but they generally do not recognize or report these potential exposures due to reluctance to report sharps injuries, or to present for testing for blood-borne virus transmission, for fear of being barred from surgical practice. Although surgeons may fear transmission of HIV in particular, it is hepatitis C that poses the greatest risk.^{1,2}

Doctors are at a high risk for needle stick injuries, while surgeons often cut or nick themselves while operating inside the patient's body cavity. Reporting of such injuries is a critical step in initiating an early prophylaxis or treatment. A survey reported that surgeons-in-training suffer an average of eight needle sticks in their first five years of training³ and virtually all surgical residents (99%) had had a needlestick injury by their final year of training. Furthermore, many injuries (51% of those assessed overall, including 16% of those involving high-risk patients) were not reported to an employee health service.³ Despite the risk, however, there is no mandatory testing of surgeons for blood-borne viruses, and infected health care workers are not prohibited from practicing medicine or invasive surgery.⁴ Local expert panels are convened to review cases if they come up, but many surgeons simply refrain from being tested.⁴

The first few incidents of doctor to patient transmission occurred in Spain⁵ and UK.⁶ In the Spanish incident five out of 222 patients exposed between 1988 and 1994 to a surgeon with chronic HCV infection became infected with hepatitis C genotype 3, which matched the surgeon's infection when subjected to nucleotide sequencing.⁵ In the UK incident a patient developed acute hepatitis C after cardiothoracic surgery.⁶ None of the 277 patients who underwent testing at least six months after exposure had evidence of infection, making the transmission rate 0.36% (1/278).⁶ In UK the infected surgeons who have a high chance of transmitting intra-operative HCV to their patients are recommended not to perform further exposure prone procedures.⁶

In another report, HCV was transmitted from a surgeon to a female patient who underwent a gynaecological surgery in UK in 1997. The woman had no other risk factor for infection apart from this surgery and further investigations

showed that the surgeon was unaware of this infection and serotyping and genotyping of the virus showed that both surgeon and patient carried genotype 4, which is rare in UK.⁷ Over 1600 women operated upon by this surgeon have been contacted and offered tests.⁷ According to a report by the Senate of Surgery of UK and Ireland, which represents the royal college of surgeon and other specialties, gynaecology is one of the highest risk specialty for surgeon injury, with sharps injuries occurring in 10% of all procedures and up to 21% from vaginal hysterectomies.⁷

The risk of hepatitis C virus (HCV) transmission to surgeons is related to the HCV prevalence in the surgical patient population.⁸ However, the risk of an individual surgeon acquiring HCV through occupational exposure is low, even in an areas where there is extremely high prevalence of HCV like injecting drug using population.⁸ Surgeons however should be encouraged to observe universal precautions and present for assessment after needlestick injuries to protect themselves and their patients from this insidious infection.⁸

Another study reported a low risk of HCV transmission to liver transplant surgeons despite their being operating on HCV infected patients.⁹ The study estimated the prevalence of HCV infection in 117 liver transplant surgeons attending the 9th Congress of the International Liver Transplantation Society using unlinked anonymous rapid testing for HCV by finger prick. Two (1.7%) surgeons had antibodies to HCV and one (0.8%) had detectable HCV RNA (genotype 1a). Assuming that both infections were acquired during surgery, the estimated maximum rate of HCV transmission was 1 per 743 to 1,045 years of surgical practice (0.96 to 1.35 HCV transmissions per 1,000 years of general surgery) and 449 to 683 years of liver transplant practice (1.46 to 2.23 HCV transmissions per 1,000 years of liver transplantation practice).⁹

Cross-sectional studies show the actual seroprevalences of hepatitis C in surgeons to be equivalent to, or slightly higher than, those of the general population.^{10,11} Therefore, the risk seems to be considerably higher than might be predicted, and can be estimated by this formula.¹² A surgeon who performs 300 procedures per year and is at the end of a 35-year surgical career has a risk of 4.9% of being HCV antibody-positive, with a 3.8% risk of being RNA-positive on polymerase chain reaction testing (people are not

infectious and will not develop any disease unless they are HCV RNA-positive). The lower and upper bounds of being RNA-positive using the highest published estimates of Pr(si) and Pr(trans) are 3.2% and 26.3%. The estimated prevalence of RNA positivity (using the most commonly accepted average probabilities) after 15 years of surgical practice (ie, mid-career) is 1.6% (equivalent to the general population).¹²

Surgeons who are HCV-positive pose a low, but definite, risk to their patients.¹² As acute hepatitis C is usually asymptomatic, therefore it will often be unrecognized.¹² Although several published cases have documented surgeon-to-patient transmission^{5,6,13} but the investigations that have followed such cases have generally shown no or minimal exposure in other patients operated by these surgeons (transmission rates of 0.036%-2.2%).^{6,13}

If a surgeon sustains a known sharps injury from an RNA-positive patient, it is recommended to do RNA testing at 4 weeks, followed by anti-HCV testing at 8 and 12 weeks.² Tests for RNA usually become positive between 10 days and 6 weeks after infection. The risk that a surgeon might transmit hepatitis C during this window period to an individual patient is 0.000002, or 2 per million procedures.¹²

Testing after known sharps injuries will not detect all exposure in surgeons, because some injuries are not recognized, and hepatitis C is usually asymptomatic. Thus, regular testing for surgeons may be prudent to offer them relatively early treatment, and a better prospect of cure.¹² Treatment for chronic hepatitis C has a 50% (range, 40%-85%) cure rate,¹⁴ but earlier detection of hepatitis C (i.e., within 12 months of infection) allows better cure rates of 50% for chronic infection and 99% for early acute infection.¹⁵

Current UK guidelines allow surgeons who are antibody-positive for hepatitis C virus (HCV) to continue performing exposure-prone procedures (EPPs) unless they have been shown to transmit HCV to a patient.¹⁶ Given the low rate of recognized transmission from surgeon to patient, this recommendation is reasonable and is consistent with the management of HBeAg negative carriers of hepatitis B who are also allowed to continue operating.¹⁶ It seems likely that, in the future, pressure will increase to remove surgeons who are HCV-positive (or positive for HBsAg without HBeAg or HIV-positive) from the list of those who perform EPPs. If implemented, this would require surgeons to be tested at regular intervals for HCV status.¹⁶

Based upon current data and recommendations issued by the Centers for Disease Control and Prevention,¹⁷ the American College of Surgeons¹⁸ recommended that relevant to all blood-borne pathogens, surgeons should continue to use the highest standards of infection control, involving the most effective known sterile barriers, universal precautions, and scientifically accepted measures to prevent blood exposure.

This practice should extend to all sites where surgical care is rendered and should include safe handling practices for needles and sharp instruments. During every operation, maximum effort should be exerted to prevent exposure of the patients' blood to the members of the surgical team and thus protect the surgical team from exposure to the blood of patients.

Immunization against HBV infection is the most effective method of preventing transmission of HBV from patients to members of the surgical team, and surgeons, therefore, should be immunized against HBV.¹⁹ Such immunization will also reduce the risk of transmission of HBV from surgeons to patients. New therapies are available for the treatment of HBV-infected surgeon.¹⁹

In summary, it is time to ensure that surgeons are aware of the compelling reasons to be tested for HCV, both after exposure and on a regular basis. The evidence^{8-12,16} shows that surgeons should not be barred from operating while waiting for an HCV RNA result after having a known exposure (needle stick or cut injury) to patients who are positive for HCV RNA, as the risk of transmission is extremely low.¹² However, surgeons who are known to be HCV RNA-positive should not perform exposure-prone procedures (procedures where the hands are in a body cavity with sharp instruments but limited visibility) until after successful treatment (ie, RNA-PCR testing negative repeatedly 6 months after treatment). Surgeons should be reassured that early detection of HCV is associated with high chances of a cure following adequate treatment.^{12,14,15}

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