

A study of bacterial monitoring of air in the laminar air flow operation theatre using an air sampling machine - its role in occurrence of or prevention of infection in prosthetic replacement arthroplasties’.

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Aims and objectives:- Superficial and deep infections in prosthetic replacement arthroplasties are a result of microorganisms present in the operation theatre air and infection rates correlate with the no. of bacteria in the vicinity of the operative wound. As few as 10 bacteria (colony forming units i.e. CFU) are sufficient to cause deep infections in implanted joints. Our study was planned with an intention of carrying out a proper scientific investigation into the effect of the bacterial load in the perioperative field on the occurrence of infections in implanted prosthetic joints. Monitoring the bacterial counts indicates the effectiveness of the laminar air flow HEPA ventilation system and use of total body occlusive suits in minimizing the in bacterial counts in the perioperative field.

Materials and methodology:- 100 total Hip/knee replacement surgeries carried in O.T. NO- 6 will be included in the study. Samples of air are taken from the perioperative field i.e. within the laminar air flow zone at three stages during the surgery **a)** before the incision is taken **b)** during the operative procedure **c)** immediately after final closure of the wound. 10,000 liters of air is sampled onto blood agar petri plates at each stage using an air sampler. (company HiMedia, Model La030) The blood agar petri plates are incubated for 24 hours at 37°C and total no of CFU/m³ of air is calculated.

The results are noted on the procedure record form and reported as satisfactory / not satisfactory using 10 cfu/m³ as the acceptable safe limit. Follow up of the patients for surgical site infection will be done for 1 year post op.

Results: Average bacterial content in the preoperative, intraoperative and post operative air samples have been 7.3 cfu/m³ and 4.8 cfu/m³ respectively. This indicates good air quality and an effective air filtration system in our laminar air flow theatre. Higher preoperative air counts seem to be an effective of increased throughfare in the operation room preoperatively. None of the patients on follow up till dates have come back with superficial or deep infection.

