Disposable surgical face masks are worn to reduce the frequency of post-operative surgical wound infections. These infections result in considerable economic and social expense in the UK, increasing hospital stays and costs by about £1bn each year (Lipp and Edwards, 2012).

Because of their design, surgical masks can contribute to infection through: “wicking”, in which moisture travels by capillary action; “leaking”, in which breath passes around the mask instead of through the filter; and “wiggling”, in which skin cells are dislodged by the mask into the air (Belkin, 1997; Schweizer, 1976).

Use of face masks in surgery is inconsistent among trusts, possibly because of inconclusive evidence about their effectiveness (Belkin, 1997; Schweizer, 1976).

The authors searched databases for primary research and extracted data from trials that adhered to a strict set of selection criteria.

They defined a clean surgery wound as “an uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital or uninfected urinary tract is not entered” (Mangram et al, 1999). Other inclusion criteria included that masks used were disposable.

Three trials met the criteria: Chamberlain and Houang (1984); Tunevall (1991); and Webster et al (2010). A combined total of 2,106 participants were included in the three.

Characteristics of trials

The authors determined there was too much heterogeneity to combine the results (Lipp and Edwards, 2012). They said:

» Chamberlain and Houang (1984) included 24 clean surgery women patients in their study. Fourteen underwent masked surgery and 10 unmasked. The study was cancelled when three infections occurred in the unmasked group. Wound infection was not defined. The type of mask used was not mentioned;

» Tunevall (1991) included 1,429 clean surgery patients, of whom 706 underwent masked surgery. Wound infection and the face masks used were defined;

» Webster et al (2010) was the only randomised trial – the other two were considered quasi-randomised. This trial included 660 clean surgery patients, of whom 313 underwent masked surgery. Wound infection was defined according to the National Nosocomial Infection Surveillance System. Standard masks were used.

Results

All three studies showed no statistically significant difference in the incidence of post-operative surgical wound infections resulting from surgery in which face masks and that in which masks were not used.

The authors concluded that this evidence is inconclusive because: the studies did not determine whether masks were working correctly; blinding was not consistent; Chamberlain and Houang’s study (1984) was discontinued and some participants dropped out in Webster et al’s (2010) research.

Other possible biases included failure to define surgical site infection and variation in duration of follow-up (Lipp and Edwards, 2012).

Implications for future research include clearly defining terms such as “surgical wound infection” and increasing the size of the trial (Lipp and Edwards, 2012). NT

References


