

contamination in the range of 45 to 200 bacteria/cu m but no standards of air purity have been laid down for neonatal units. The standards of air purity for operating theatres are less than 35 bacteria/cu m of air(5). We can achieve these standards by periodic fumigation.

The bacterial floor counts done before fumigation but after cleaning ranged from 320 to 388 bacteria/sq cm. Fumigation could only reduce them to 118 to 136 bacteria/sq cm, a reduction of 57 to 66%. Thus fumigation is not an effective method of reducing floor bacteria. The American Public Health Association has laid down standards and graded floor cleanliness. If there are 0-25 bacteria/sq cm, cleaning is good, with 25-50 bacteria sq/cm cleaning is fair and if there are more than 50 bacteria per sq cm of floor, the cleaning is poor. The study clearly shows that floor cleaning is not proper and even fumigation can not effectively clean the floors.

Disinfection of air is now rarely considered necessary in hospitals of Western countries but this study has shown that it is needed in India as the air counts are high and these can be reduced after fumigation. The use of cap and mask should be obligatory for all and surveillance of environment can help us reduce the incidence of cross infection.

This is a preliminary study on a subject of daily use and has its limitations but can act as a baseline work for further studies.

**P.S. Shekhawat,  
R.N. Singh,  
R. Shekhawat,  
K.R. Joshi,**

*Departments of Pediatrics and  
Microbiology, Regional Institute of  
Maternal and Child Health,  
Dr. S.N. Medical College, Jodhpur.*

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## Complete Covered Anus in Female Neonates

Non-communicating, low anorectal malformations in female neonates are exceedingly rare(1). We describe two patients with completely occluded anus of the covered type, who presented in the early neonatal period with features of intestinal obstruction.

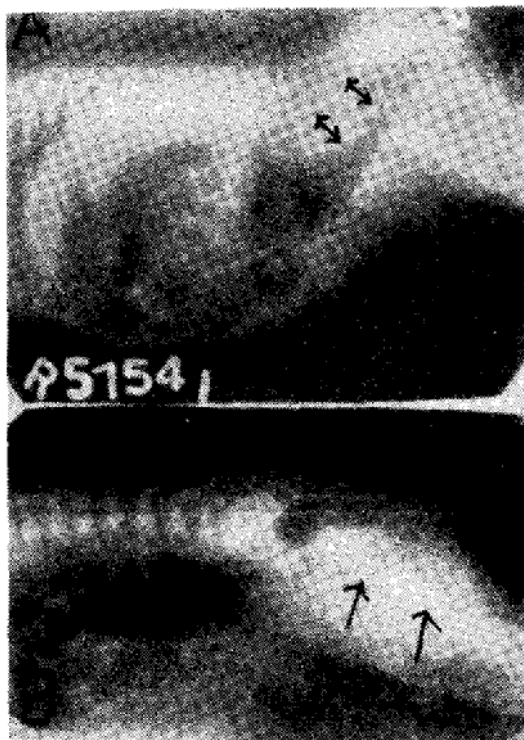
A 3-day-old full term female baby, weighing 2.5 kg was detected to have absence of anal opening, inability to pass meconium and gross abdominal distention. There were no associated congenital anomalies. A small dimple over the normal anal site used to bulge during crying and straining. The vestibule did not show any

opening on inspection and gentle probing. The urethral opening and vaginal introitus covered with normal hymen were normally placed. A cross-table prone lateral roentgenogram of pelvis showed a linear gas shadow ending blindly well below the I point. However, the increased presacral space and proximal uterus like shape of the gas shadow suggested a high anorectal malformation with rectogenital fistula (*Fig. 1a*). A radio-opaque marker (straight needle covered in a silastic tube) in the vagina demonstrated the bowel gas shadow behind the vagina (*Fig. 1b*). Perinatal ultrasound showed the blind pouch at a depth of 8 mm below the skin, meconium was obtained on aspiration of the pouch at this depth. During exploration the pouch was found 4 mm below the skin. A perinatal anoplasty (crucial interdigiting) was carried out.

A similar female newborn with similar clinical features presented at 48 hours of

age. A cross table prone lateral roentgenogram of the pelvis showed rectal gas overlapping the I-point. An invertogram, however, was suggestive of a low-lesion just beneath the anal skin. The perineal ultrasound showed a blind pouch at a depth of 8 mm. On direct aspiration, meconium was obtained at 10 mm depth and explorations revealed the sac at 8 mm below the skin. A skin lined perineal anoplasty was performed. At follow up after 24 months both babies are normal and thriving well.

Complete covered anus is an extremely rare condition and may mimic higher anorectal anomalies. These cases emphasize the inadequacy of the Wingspread classification of anorectal anomalies (1984) which is a simple, revised, 1970 version but confining the list to the common anomalies. Complete covered anus has not been classified under low type of lesions in this new classification but could be placed under miscellaneous and rare lesions(2). It highlights the value of traditional International classification developed in Melbourne in 1970 which is logical, based on accurate dissections and descriptions of the anomalies, consistent with embryological concepts relating the lesions to sphincters, yet it was not universally accepted and considered too complex and too detailed(2). A fully developed perineum with an anal pit, bulging membrane or meconium beads and presence of normal urethral meatus and vaginal introitus covered by a normal hymen in addition to better general condition in a full term good birth weight-baby with absence of other anomalies, are suggestive of his condition. A combination of radiological, ultrasound, direct aspiration and operative exploration is required to determine the level at which the rectum terminates. A variation in the depth of the pouch by various techniques appears to be



*Fig. (a) Prone lateral view showing increased presacral space. (b) Bowel gas shadow well behind the vagina (radio opaque marker).*

related to positional changes(3). Effective treatment of the covered anus, once diagnosis is established is easy and consists of perineal anoplasty which ensures satisfactory results.

**M.H. Mehta,**

**R.V. Patel,**

*K.T. Children Government Hospital,  
Rajkot-360 001.*

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