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Discussion

Dr. Frank Allbritten (Kansas City, Kans.): Dr. Tom Holder in our Department has been interested in this problem and asked that I discuss it because he could not be here. The information he has given me I am relaying to you.

We agree with Dr. Hamilton and Dr. Koop that certain patients with esophageal anomalies are better managed by a staged, rather than a primary, repair. There is now general agreement that esophageal atresia without tracheoesophageal fistula is best treated by gastrostomy and cervical esophagostomy in the newborn period, with a subsequent color interposition.

We believe a staged approach in the premature infant with the usual esophageal atresia and distal tracheoesophageal fistula does have advantages. The staged approach has consisted of immediate gastrostomy under local anesthesia, followed some 24 hours after admission by a retropleural division of the tracheoesophageal fistula under local anesthesia.

A subsequent esophagoesophagostomy is carried out transpleurally under general anesthesia when the patient has reached appropriate maturity and size. (Slide)

Our current indications for a staged approach are patients under four pounds; patients four to five pounds if not vigorous; patients over five pounds who are quite ill, even after gastrostomy.

Initially, all patients premature by weight were treated by a staged approach. It is apparent, however, that some of these patients of four to five pounds who are vigorous, have a lusty cry and minimal pulmonary complications can tolerate a primary repair.

This slide (Slide) shows the experience with premature infants treated by a staged approach. These are not in chronological order but are listed simply by their weight.

During this time, four patients weighing between four and five pounds were treated by a primary repair and survived. There were five deaths in the 15 patients treated by the staged approach. During this same period of time, four full-term, critically ill patients were staged, with two survivors.

You will note that the heavier patients in the previous slides actually had the highest mortality, but this slide gives some information why that occurred. The associated anomalies present in the five prematures who died are shown in this slide. (Slide)

Although we have not yet surgically attacked the associated anomalies, it seems reasonable that some of these patients might be palliated or corrected between the second and third stage of the esophageal repair. Since reduction of the mortality of the premature by the staged approach, further significant mortality reduction will have to be made by salvaging patients in the large group with associated anomalies.

Dr. Harris B Shumacker (Indianapolis): We have had generally good results and this is attributable to the early and sustained work of my associate, Dr. J. S. Battersby, who has had direct charge of patients with tracheoesophageal fitula.

From 1950 to date, 178 consecutive patients with esophageal atresia have been operated upon. No patient has been excluded, regardless of associated anomaly or disease, or the severity of any associated disease. There has been no reduction in the average age at the time of admission during the 15-year period. There has also been no increase in the average weight, in the first period the average weight being 6¼ pounds and in the last, 5½ pounds.

Except those who obviously required esophageal replacement, such as those with atresia without fistula, the aim has been a retropleural, one-stage primary anastomosis and this has almost invariably been achieved. The survival rate, in an over-all sense, has been related to patient size. Those few 7 pounds or over had a survival rate of 88%, those ranging from 5 to 7 pounds, from 55 to 60%, and those from 4 to 5 pounds, 31%.

During this period, it has been necessary to carry out esophageal replacement in all patients, all of whom have survived, though one late death occurred.

Further examination of the data shows that the survival rate of the entire group is related principally to the associated anomalies and associated disease. In one recent 5-year period, for example, there were nine deaths. Five of these were due to cardiac or genitourinary lesions which, in our opinion, were totally incompatible with survival. Two were due to advanced pneumonitis present at the time of admission, and the other two to unfortunate technical nursing errors. It is difficult to see

how any one of these nine deaths in this 5-year period could have been prevented by staging the operation.

Altogether, the 178 consecutive patients averaged 5⅝ pounds and had a 63% survival rate.

DR. WILLIAM HENRY SNYDER (Los Angeles): It is important to emphasize the improvement to be derived from staged procedures, in our opinion, in all ill or premature babies with tracheoesophageal fistulas, and also in those with blind, widely separated esophageal segments.

As suggested by Mr. Howard of Australia, I believe, it may be worth while, during the waiting period, to introduce through the mouth a large mercury-weighted catheter twice daily, and stretch for a few moments, or minutes, the proximal pouch.

In two recent cases we have applied this technic over a 2-week period in one and over a 6-week period in the other. From x-ray studies it would appear that the length of the upper segment had been increased in one, 2 cm., and in the other, 3 cm. By this maneuver in both instances it was possible to do a successful primary anastomosis.

Dr. Paul Johnson, of our staff, performed the operation on the first patient and has reported it. Dr. Morton M. Woolley performed the second operation.

Perhaps this method should be tried during the waiting period in some of the future cases similar to those described in the excellent paper presented today. Proof that this method will be helpful routinely awaits many more controlled applications of it. So far it appears harmless and encouraging.

DR. JAMES PRESSLY HAMILTON (closing): We have not used Howard's technic of stretching the upper esophageal pouch, although we have communicated with him about it. I think that he has used this procedure in more than eight cases now. In one he stretched the upper esophageal pouch from C-7 down to T-6 with this procedure. We believe the staging procedure, as we have presented it here, should be carried out. The fistula should be divided and, if reasonable, the aortic branches to the esophagus should be divided so that the collateral circulation to the distal esophagus can take over. If, at the time of operation, a wide gap between the esophageal ends is demonstrated, stretching of the proximal pouch with a mercury Bougie is an excellent addition to the staging procedure and will be a significant contribution.

The patient without a fistula is an ideal candidate for this technic of staging because a thoracotomy is unnecessary. If an intrathoracic colon transplant is anticipated, the second operation must be delayed until the child is strong enough to have this procedure done with safety.