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#### DISCUSSION

DR. WARD O. GRIFFEN, JR. (Lexington): I'd just like to congratulate Dr. Rhoads on his beautiful paper and presentation, and also say that Dr. van Rush and I have been interested in the use of this material in patients undergoing surgery, and in our Clinical Research Center at Lexington, Kentucky, have done extensive balance studies on these patients.

We would concur that it is possible in major surgery to develop positive nitrogen balance and maintain it with the continual use of this intravenous material. We have not seen any glycosuria in these patients, all of whom have had excellent renal function.

We have now studied 14 patients who have had a variety of procedures, including laryngectomy and bilateral neck resection, abdominal perineal resection, posterior exenteration, et cetera. So they are, on Dr. Moore's old scale, fairly extensive operations which usually have been considered to produce negative nitrogen balance.

In studying the electrolyte balance, however, we have been interested in the fact that we can maintain positive potassium and sodium balance, but, even more interesting, we have a fantastic positive chloride balance, which we have been unable to explain—where the chloride is going.

I wonder if you have seen this, and if you have any explanation for it.

DR. STANLEY J. DUDRICK (Closing): In response to Dr. Griffen, I am not exactly sure where all the chloride goes myself. We have noted, as he has, a marked potassium and sodium balance, and have felt that this represented intracellular movement of the potassium and sodium, which would be the normal flux of these electrolytes with an embolism and incorporation of nitrogen and protein into the cell.

We have had likewise an inordinate chloride balance. Whether this is because we have been giving the salts primarily as chloride salts has not really been investigated at this point sufficiently to give you an adequate answer.

We are now engaged in isotopic studies of the basic electrolytes, and I hope that in the next year

or so we might be able to give a little more basic knowledge to exactly what does happen to the various electrolytes and, eventually, amino acids of the mixture.

I want to show you one other rather striking case that we had in a newborn infant with an alkalocoele, with most of his gut cut out, as you see, on the abdominal wall. We have had experience now with three such infants. Generally in patients such as this there is a mortality of about 94 to 100 per cent. Thus far we have been fortunate enough to save all three of these infants that have come to us, by a combination of, probably, good surgery and Children's Hospital, and, hopefully, some support from parenteral hyperalimentation.

This child was operated on immediately after admission. However, the body was too small to admit all this bowel that you see here, and, therefore, a silastic mesh was sewn around the perimeter of the fascial defect, and then covered over with moist gauze that was kept wet with Zephiran for a period of several weeks.

The next slide I believe shows (slide) the period during which she was fed entirely by vein from the operation and from her day of birth, for the first 26 days. At that point she had gained sufficient weight and had expanded her body wall sufficiently that we could then take out the mesh and close the fascia, primarily.

(Slide) The next slide shows that having been done, and you can see the skin granulating in over the closed fascial defect; and this child went on to be discharged from the hospital and to grow in a normal percentile for her weight.

(Slide) The last slide just shows the subclavicular-subclavian technic, which we believe is very essential to the success of our parenteral feeding. We feel it is very important to have the minimum length of catheter intravascularly, with the minimum amount of dead space around the catheter, and therefore go percutaneously into a large bore vessel, rather than threading the catheter up a cephalic or median antecubital vein.

With this technic, with proper attention to anatomical landmarks, pneumothorax has never been a complication in the over 700 patients that we have utilized this technic on thus far.