Hiatal Hernias in Children:  
Special Reference to the Short Esophagus*

ARTHUR M. OLSEN, M.D., F.C.C.P.,** COLIN B. HOLMAN, M.D.,†  
and LLOYD E. HARRIS, M.D.††  
Rochester, Minnesota

Esophageal hiatal hernias are relatively uncommon in children. Since 1950 we have seen 20 children with hiatal hernias at the Mayo Clinic. During the same period the diagnosis of esophageal hiatal hernia has been made in more than 17,000 adults, and the overwhelming majority of these adults were in the older age group. In this communication we shall review the cases and the roentgenographic findings of some of these 20 children in order to illustrate the types of hernias encountered and the problems that they present. Also, we shall discuss our experience in the management of hiatal hernia and its complications in infants and children.

At the time of their first registration, all 20 children were 14 years of age or less. Although most of them were seen early in life, some of them have been followed for as long as 20 years. In all patients, at least part of the stomach was herniated through the esophageal hiatus of the diaphragm into the thorax.

By means of the classification of Akerlund,1 the hernias may be classified as paraesophageal hernias, sliding hernias, or hernias of the short esophagus type. In the paraesophageal or rolling hernia, the esophagus is of normal length and extends to the esophageal hiatus but part or all of the stomach is herniated into the thorax through the hiatus. The sliding or gastroesophageal hernia likewise has a portion of stomach within the thorax. However, the esophagogastric junction is located above the esophageal hiatus and the lower portion of the esophagus is usually tortuous and redundant. The term “short esophagus” should be reserved for those patients who have an actual anatomic shortening of the esophagus. In these patients part of the stomach must reside in the thorax in order to provide for esophagogastric continuity.

**Clinical Material**

In classifying the esophageal hiatal hernias of the 20 children, we found that two had hernias of the paraesophageal type, one had a hernia of the sliding type and the remaining 17 apparently had a short esophagus with intrathoracic stomach. Although we are primarily concerned with the 17 patients having short esophagus, we should like to review briefly the cases of the other three patients.

Paraesophageal Hernia. — Both patients having this type of hernia were male infants, and both were admitted as emergency patients with signs of obstruction of the gastrointestinal tract. They required immediate surgical intervention, and in both patients the entire stomach was

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*Mayo Clinic and Mayo Foundation, Rochester, Minnesota. The Mayo Foundation is a part of the Graduate School of the University of Minnesota.  
**Section of Medicine  
†Section of Roentgenol  
††Section of Pediatrics
herniated through the esophageal hiatus into the thorax. In neither patient was there any abnormality of the esophagus itself. One of the children was less than a week old and suffered postoperative complications including bilateral pneumothorax and diarrhea. Despite these unfavorable complications the child appeared to be making a satisfactory recovery. Quite unexpectedly, he died about a week after surgical intervention and, unfortunately, necropsy was not permitted.

The other child was slightly more than 4 months of age when obstructive symptoms developed. He had been vomiting for 24 hours when he was admitted to the hospital. It was thought that he might have a malrotation of the intestine, but operation showed that his entire stomach was displaced into the left side of the thorax. Although the child’s postoperative course was stormy, he made a good recovery and returned some 14 months later for repair of an incisional hernia. Recent correspondence with this child’s physician reveals that he is well and apparently normal at 9 years of age.

_Hiatal Hernia of Sliding Type._ — A 3-month-old boy was registered at the clinic on May 14, 1956. His mother stated that he would regurgitate his feedings unless she held him in an upright position for 2 to 3 hours after he was fed. Roentgenograms of the stomach and esophagus at the original visit did not show any abnormality and it was felt that the child had the clinical picture of chalasia. After some discussion it was decided to carry out a conservative program. The mother was instructed to keep the child in an erect position after eating and to elevate the head of his bed. He continued to have trouble, however, and returned to us on December 4, 1956. At this time a hiatal hernia was demonstrated by roentgenography. Esophagoscopy disclosed severe ulcerative esophagitis. Surgical treatment was recommended, and although we were concerned about the length of the esophagus, a satisfactory repair was obtained by a transthoracic approach. The child has been entirely well during the 2½ years since his operation (fig. 1a and b).

![FIGURE 1a: Sliding-type diaphragmatic hernia: 2 or 3 cm. of the stomach extends above the hiatus in a 10-month-old boy. 1b: Esophagogastric junction is in the normal position 3 months after surgical reduction.](Image)
**Short Esophagus With Intrathoracic Stomach.** — Seventeen children had evidence of a short esophagus, as demonstrated by roentgenographic or esophagoscopic examination or as proved at the time of operation or necropsy. In some of these patients the reason for the short esophagus was evident but in others it was rather difficult to describe the exact sequence of events which led to the clinical picture seen at the time of our examination. Some of the more representative cases of short esophagus in this group will be described.

**Case 1:** A 5-year-old girl was registered at the clinic on February 20, 1956. It was recognized that she had congenital heart disease and the shadow of a large diaphragmatic hernia was noted in the posterior mediastinum. No treatment was recommended for either condition at that time. She returned in April, 1956, with cardiac failure. She was brought into reasonably good condition after digitalization and supportive therapy, and it was felt that further diagnostic procedures should be carried out. Accordingly, catheterization of the heart was done, but, unfortunately, the child died as a sequel to this procedure. Necropsy revealed pulmonary stenosis and cor bicornuare. The spleen was absent and a large hiatal hernia was found with at least half of the stomach in the thorax. The esophagus was unusually short and did not measure more than half of its usual length. No evidence was found of esophagitis or obstruction.

Without doubt this case represents an instance of true congenital shortening of the esophagus. It illustrates the point that at times large hiatal hernias are completely asymptomatic, not only in adults but also in children. Furthermore, it calls attention to the work of Peters, who stated that the congenital short esophagus is frequently associated with other congenital anomalies.

**Case 2:** A 3-year-old boy was seen a few weeks after he had swallowed lye and he remained under our observation until his death some 5 years later. Roentgenograms showed an excessively long cicatricial stricture of the esophagus (fig. 2). Dilatations were begun over a previously swallowed thread, and subsequent roentgenograms showed that the upper portion of the stomach had been pulled into the thorax. Over a 3-year period the stricteed portion was dilated 37 times. Unfortunately, the results were not as favorable as those obtained in most patients with cicatricial strictures of the esophagus; finally total esophagectomy with anastomosis of the stomach to the hypopharynx was carried out. The results of this operation were never particularly satisfactory, and the child continued to have signs of obstruction at the anastomosis of the hypopharynx with the stomach. Further dilatations

![FIGURE 2: Stricture caused by lye, with hiatal hernia: advanced irregular constriction and shortening of the distal half of the esophagus are evident with about 2 or 3 cm. of the stomach above the diaphragm.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21347/ on 06/26/2017)
were carried out with the use of a previously swallowed thread as a guide. Intussusception finally developed which in turn was related to a mass of thread previously swallowed to aid in the dilatations. Death occurred after an emergency operation.

In this case it was felt that the presence of intrathoracic stomach was a factor in the rapid recurrence of esophageal obstruction after dilatation. The regurgitation of acid gastric secretions into the esophagus was probably responsible for the constant esophagitis.

**Short Esophagus With Early Obstructive Symptoms.** — Four of the 17 children with short esophagus had difficulty in swallowing from early life. All four cases are described briefly.

*Case 3:* A 1-month-old girl was seen with what appeared to be stenosis of the esophagus. No evidence of a tracheo-esophageal communication could be demonstrated. Numerous attempts were made to treat this child by means of dilatation but much difficulty was encountered. On two occasions the child suffered an esophageal perforation requiring drainage of the pleural space. Finally, it was decided to attempt esophagectomy, but, unfortunately, the child died after this procedure. Roentgenograms of the esophagus made at the time of the child's first visit and 21 months later, just before operation, are shown in figure 3a and b.

*Case 4:* A girl seen about 1 month after birth because of esophageal obstruction was found at esophagoscopy to have a smooth stricture without evidence of esophagitis. A total of 11 dilatations were done over a previously swallowed thread during a 2-year period. Follow-up study shows that she has done extremely well and has not required any further treatment (fig. 4a and b).

*Case 5:* A 2-year-old boy had been unable to swallow anything but liquids from the age of 3 months. Efforts to give him solid foods were unsuccessful and he was found to have a long stricture of the esophagus with dilatation of the proximal end. This child has been treated by means of dilatation over a previously swallowed thread for 11 years. During this time he has had 19 dilatations, and although roentgenograms still show evidence of considerable obstruction he gets along remarkably well.

*Case 6:* A 2-year-old boy who was seen at the clinic had difficulty swallowing solid foods. In fact, no serious effort had been made to feed the child solid food until he was 10 months of age. At esophagoscopy he was found to have a smooth stricture. Eight dilatations have been done over a 3-year period and he has responded well.

Each of the four children in cases 3, 4, 5 and 6 had long stenoses of the esophagus associated with intrathoracic stomach. The history in

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**FIGURE 3a:** Stenotic esophagus: long, irregular, narrow lumen of the esophagus with high-grade obstruction in a 1-month-old infant. **3b:** Examination 21 months later showed short stenotic esophagus and a portion of the stomach above the diaphragm.
each case would suggest that the patient was born with stenosis of the esophagus. The hiatal hernia was either present at birth or developed after the dilatations.

**Short Esophagus With Stricture.** Initial History of Postural Regurgitation. — The histories of nine patients suggested incompetence of the lower sphincter of the esophagus or chalasia. In each case the parents of the patient suggested that regurgitation was related to posture and, therefore, it is entirely possible that the esophageal stricture developed as the result of prolonged esophagitis. The actual onset of obstructive symptoms varied from 3 months to 4 or 5 years, but insofar as we could tell, regurgitation had begun at birth. Brief reports of three representative cases follow.

**Case 7:** A 4-year-old boy was registered at the clinic on June 21, 1941. He had had postural regurgitation from birth but no particular difficulty in swallowing had developed until shortly before his registration. At esophagoscopy, a smooth stricture was found without evidence of esophagitis. Dilatations were begun over a previously swallowed thread. Subsequent treatment was continued with the co-operation of his home physician. Roentgenograms of the esophagus taken 9 years apart are shown in figure 5a and b. This boy has done extremely well, and no dilatations have been required in the last 5 years.

**Case 8:** A girl, first seen at the clinic in July, 1947, at the age of 8 years, had had symptoms of postural regurgitation from early infancy and obstructive symptoms had developed later. Some dilatations had been done before we saw her. Roentgenograms showed a stricture in the lower third of the esophagus. A series of 24 dilatations was given over a 9-year period. The mother wrote that the patient has been exceptionally well and has not required any dilatation since we last saw her in 1956.

**Case 9:** A 5-year-old boy was registered at the clinic in 1950. He had a history of postural regurgitation since birth and had had hematemesis at the age of 1 year. All obstructive symptoms had developed within a year. We carried out dilatations on two occasions and subsequent dilatations were performed in his home community during the next 7 years. The results, however, were not satisfactory, and resection of the esophagus with interposition of the right colon was performed by surgeons in his home community in 1957. The results of this operation have been excellent.

![FIGURE 4a: Stenotic esophagus: long, smooth, narrow lumen of the esophagus with some obstruction in a 1-month-old infant. 4b: Appearance after treatment by dilation: increase in caliber of stenotic segment and small esophageal hiatal hernia 19 months later.](image-url)
The histories of the nine patients in this group suggest that in each case stricture was the result of peptic esophagitis and the subsequent cicatricial changes associated with healing. Six of these patients have been treated satisfactorily by means of periodic dilatations over a previously swallowed thread. One child, as mentioned, was treated elsewhere by means of a colon transplant. Two patients have been lost to follow-up.

FIGURE 5a: Stricture of the esophagus: short, narrow segment below which there is a long supradiaphragmatic portion of the stomach in a 4-year-old boy. 5b: Appearance 9 years later, during which period dilations were carried out.

FIGURE 6: Hiatal hernia with ulceration in the terminal portion of short esophagus.
Short Esophagus With Stricture. Symptoms Occurring Late in Childhood. — In two children in our series no symptoms developed until they were several years old. Both cases are described.

Case 10: A 7-year-old boy registered at the clinic on October 9, 1956. At the age of 4 weeks this child had had projectile vomiting of blood. Abdominal operations were performed on two occasions a week apart, and apparently no cause for the bleeding was found. The exact findings at the time of operation are not known, but apparently the child had no further difficulty until he was 4 years of age, at which time he swallowed a coin which stuck in his esophagus and an emergency esophagoscopy was required. Dysphagia began at the age of 5, and at that time dilatations were carried out. From a historical standpoint, the sequence of events is difficult to analyze. However, we found a hiatal hernia with an apparent short esophagus and an ulcer at the esophagogastric junction (fig. 6). At esophagoscopy the ulcer could be demonstrated, as well as some associated esophagitis. Although stenosis was not demonstrated at the time of esophagoscopy, the child subsequently required dilatation. He has apparently done rather well on medical management alone, according to recent information from his family.

Case 11: A 14-year-old boy registered at the clinic on December 10, 1952, who apparently had not had esophageal symptoms until the age of 8 years, when obstructive symptoms began. Roentgenograms showed partial obstruction of the midesophagus with a peculiar beaded appearance (fig. 7a). A number of dilatations have been carried out (fig. 7b) but the results were not long lasting. Esophagoscopy demonstrated considerable evidence of esophagitis above the stricture. In the hope of controlling the problem of gastric acid and making treatment more effective, vagotomy and pyloroplasty were done in August, 1958, and further dilatations have been carried out with considerably greater success.

The etiology of the condition in cases 10 and 11 is far from clear. However, they do differ from the other cases in that symptoms developed at a relatively late stage. The patient in case 10 is the only one in our series who had a well-defined peptic ulcer at the esophagogastric junction. One wonders if this lesion falls in to the category of the so-called Barrett ulcer. In both of these cases we are reminded of the so-called lower esophagus lined by columnar epithelium which was described by Barrett and likewise considered by Allison and Johnstone.

Additional Comment Concerning Case Presentations. — Although no conclusions can be drawn concerning paraesophageal hernias in children on the basis of our two cases, it would certainly seem reasonable

FIGURE 7a: Midesophageal partial obstruction with dilation above and “beaded” appearance or narrow segment and associated herniation of part of the stomach. 7b: Considerable change in appearance immediately after dilation. Irregularity of outline suggests presence of esophagitis.
to recommend that these hernias be repaired as soon as possible after the diagnosis has been made. Often the presenting symptoms are those of incarceration, and definitive treatment is mandatory. As in adults, paraesophageal hernias often do not present the problem of incompetence of the cardia with reflux esophagitis.

On the other hand, patients with sliding hernias usually present the picture of incompetent cardia. In infants and small children obviously it is difficult to elicit the symptom “heartburn,” but often postural regurgitation is evident and the physician should suspect the presence of a sliding hernia with incompetence of the cardia. Hematemesis should suggest the possibility of peptic esophagitis. Hiatal hernia usually can be demonstrated by the roentgenologist, even in small infants. At esophagoscopy, esophagitis can be detected and the length of the esophagus can be estimated. Surgical repair may be indicated in most infants and children with sliding hernias, and the presence of esophagitis would represent a strong indication for surgical intervention. In our series we saw only one patient with sliding hernia before shortening had taken place.

With the exception of the asymptomatic hiatal hernia and short esophagus occurring in the patient with congenital heart disease and the hiatal hernia associated with the stricture caused by lye, it was most difficult to be positive about the actual cause of the short esophagus in any of the patients. In four patients we have reason to believe that stenosis of the esophagus was the primary disorder. In the remaining cases it would certainly seem that the stricture was a secondary phenomenon and apparently a result of regurgitation esophagitis. Whether the initial disorder was congenital hiatal hernia, congenital short esophagus, chalasia, or “lower esophagus lined by columnar epithelium,” as suggested in two cases, it is indeed difficult to say.

In our hands, treatment of the short esophagus with stricture in children has been conservative. In the two instances in which we used esophagogastric anastomosis, the results were not favorable. For the most part, dilatation with a previously swallowed thread as a guide has proved to be reasonably satisfactory. Ten of our patients treated by dilatation and conservative methods are known to be doing exceptionally well or are being satisfactorily managed. Two children have been lost to follow-up. One child has had vagotomy and pyloroplasty in the hope of making his conservative treatment more satisfactory. Another one has had a successful operation performed elsewhere, in which the colon was transplanted to the thorax as a prosthesis.

Discussion

Much progress has been made toward understanding the various factors involved in the development of esophageal hiatal hernias in adults. A brief review of some of our information on this subject will be helpful in pointing out how the problem of hiatal hernia in adults differs from that in children.

It is well recognised that the esophageal hiatus of the diaphragm is formed by the right crus which divides and encircles the orifice through which the esophagus passes into the abdomen. Of great concern are the anatomic and physiologic factors which tend to keep the esophagogastric junction in its normal position and which, in effect, prevent herniation of the stomach into the thorax. The afore-mentioned crural fibers of the diaphragm are said to form a pinchock, sometimes called a “sling,” which, by its action, tends to anchor the cardia in its normal position. Furthermore, a fibrous structure called the “diaphragmatico-esophageal ligament” or membrane has been
described which likewise tends to hold the junction in its proper place. In addition, some authorities have stressed the importance of the left gastric artery and the vagus nerves which tend to hold the stomach in its normal position below the diaphragm. In this manner, the crural fibers surrounding the hiatus have been described during inspiration and expiration, which provides a physiologic explanation for a stable relationship between the esophago gastric junction and the hiatus.

The occurrence of esophageal hiatal hernias of the sliding type in adult patients has been explained by the demonstration of degenerative changes in the afore-mentioned anatomic structures. The diaphragmatic-esophageal ligament becomes attenuated in older people; in fact, this structure becomes so frail that Barrett has said, "the membrane must be dissected out with eye of faith." It has been shown that there is a thinning of the crural muscles of the diaphragm and a loss of the elastic fibers, thus providing for greater mobility of the lower portion of the esophagus. However, the most important factor in the development of hiatal hernias seems to be an increase in intra-abdominal pressure. Such factors as obesity, pregnancy and the use of abdominal corslets and belts may be responsible for an increase in pressure. Furthermore, it has been stated that sudden compression of the abdomen as the result of trauma may result in widening of the already weakened esophageal hiatus. In addition, it must be remembered that intra-abdominal pressures invariably exceed the pressures within the thoracic cavity, and, in view of these circumstances, it would seem probable that hiatal hernias do not occur more frequently.

Recently Botha has made a detailed study of the esophageal hiatus of the diaphragm in infants. He has shown that in the normal infant the phreno-esophageal ligament is not only a real structure but also a strong and heavy structure. In addition, the crural muscles which surround the hiatus are greatly thickened and produce a well-defined diaphragmatic "tunnel." These thick crural fibers are placed in such a way that this tunnel enters the abdomen in an oblique direction, a feature which is certainly less obvious in the adult.

Obviously, the mechanism of development of hiatal hernia in children must be different from that which has been described for the aging adult. Although it seems rather certain that the sliding type of hiatal hernia in adults is an acquired phenomenon, it is probably have a congenital basis. Possibly these children are born with a large or malformed hiatus, and there is little to prevent herniation of the stomach from the abdomen into the thorax.

In adults it is now generally recognized that the great majority of hiatal hernias of the short esophagus type have an acquired origin. In most cases they develop from hiatal hernias of the sliding type. Although we have abundant physiologic proof that an effective lower esophageal sphincter exists (both in adults and in children), this sphincter often becomes incompetent when it is displaced into the thorax. Regurgitation of gastric secretions into the esophagus frequently takes place in sliding hernias of esophagitis; with alternate healing and cicatrization and shortening of the esophagus take place. Regurgitant esophagitis will occur when the lower sphincter is destroyed by surgical procedures or occasionally when it is overstretched during dilatation for achalasia. Persistent vomiting may produce ulceration. In fact, any cause of esophagitis, chemical or inflammatory, may result in shortening and cicatrization of the esophagus, and thus a portion of the stomach is pulled into the thorax.

The explanation for short esophagus in children is not so clearly understood. It seems probable that in most instances the actual shortening of the esophagus is an acquired phenomenon just as it is in adults. Carre and Astley have shown that normal infants have an effective lower sphincter. However, pediatricians recognize the syndrome of achalasia or postural regurgitation as a condition which, fortunately, corrects itself in most instances. The majority of authorities feel that incompetence of the cardia is most uncommon except when associated with hiatal hernia. In children, a congenital hiatal hernia is the best explanation for incompetence of the cardia, reflux esophagitis and subsequent stricture.

The true congenital short esophagus certainly exists, although it is undoubtedly rare. Peters said that it is often associated with other congenital abnormalities, and that both the hernia and the short esophagus may be completely asymptomatic. Such a case was present in our series.

It also seems probable that some infants are born with congenital stenosis of the esophagus. In some instances, intrathoracic stomach may not be suspected or, for that matter, may not actually be present at birth, but, as the child grows, a portion of the stomach is drawn into the thorax. It is often difficult to distinguish these children from those born with hiatal hernia in whom an acquired stricture with shortening has developed.

Another type of anomaly must be mentioned, namely, the lower esophagus lined by glandular epithelium. Barrett described this esophagus as normal in all respects except for the nature of its mucosal lining. Because the patients have secreting glandular mucosa above the lower esophageal sphincter, esophagitis is likely to develop and in some patients a solitary ulcer, which has been labeled as a "Barrett ulcer," develops at or below the esophago gastric junction.
To complete the picture, one should mention the short esophagus that is the result of esophagitis and cicatrization from the ingestion of caustics such as lye, or that may be produced by intense vomiting. Not infrequently, some of the stomach is drawn into the thorax in conjunction with such unfortunate occurrences.

When a definite diagnosis of hiatal hernia of either the paraesophageal or sliding type can be made in an infant or child, there is certainly every reason to consider repair of the lesion. In paraesophageal hernia, the surgeon is able to relieve obstruction and bring about normal anatomic relationship. In sliding hernia, the surgeon should be able to restore the competence of the lower sphincter of the esophagus and thus prevent the development of regurgitation esophagitis with all of its complications. In our cases of short esophagus with stricture it is hard to know how many of these strictures might have been prevented had early repair of the sliding hernia been carried out.

The problem of therapy for the short esophagus with stricture is indeed difficult. It is impossible to repair these hernias by any conventional means. Resection of the stricture with high esophagogastrectomy has been recommended by Husfeldt and associates, and certainly there are instances in which satisfactory results have been obtained. The problems that are likely to arise after esophagogastrectomy are often serious, and surgeons have been looking for a better solution to the problem. Recently efforts have been made to transpose a segment of intestine or to bring the right colon into the thorax. These procedures have met with varying degrees of success. In a child, the matter of further growth is of some importance, and it is often difficult to know whether the surgically inserted prosthesis will grow at the same rate that the child does. Heretofore it has been our policy to be as conservative as possible in the management of these conditions.

We have employed a technic of dilation by which a previously swallowed thread is used as a guide. In small children dilations are usually done after the administration of an anesthetic. Older children, however, are usually able to tolerate dilations satisfactorily without anesthesia. A flexible wire spiral, graduated Plummer sounds and a whirlbone are needed for the dilations. The thread is passed through the spiral and in turn guides the dilating instrument through the stricture into the stomach. The size of the sounds varies, of course, depending on the size of the child and the degree of obstruction. Often it is necessary to begin with No. 20 to 22 F. sounds and to carry out periodic dilations over a period of weeks, months and years.

In the early stages of treatment, dilations are usually performed about once a week, but as the size of the sounds is increased the interval between dilations becomes greater. As the larger sounds are passed, relief from dysphagia lasts longer and soon 3 to 6 months may elapse between treatments. Ultimately the stricture is dilated to the size of a No. 45 F. sound, but even after reaching this goal, dilations probably should be repeated annually.

The problem of incompetence of the cardia is certainly not solved by dilating the stricture. If anything, regurgitation occurs even more readily after dilation. Therefore, it is necessary to continue medical treatment. It is always desirable that the child lie on the bed with the head higher than the feet. This is usually accomplished by placing wooden blocks 4 to 8 inches high under the head of the patient's bed. In addition, antacid medication should be taken regularly by the patient, shortly after meals and especially at bedtime. Constricting abdominal garments should not be worn.

Admittedly, the results of therapy by dilation are not ideal. However, we have found the results to be generally satisfactory, and it is our feeling that conservative methods should be tried and that surgical resection of the esophagus should be deferred whenever possible. When the child has reached his full growth the question of surgical resection can be reconsidered. However, most of our patients have done so well with conservative management that surgical treatment has not been necessary.

**SUMMARY**

Hiatal hernias are rare in infants and children, as evidenced by the fact that only 20 patients less than 15 years of age with this condition have been seen at the Mayo Clinic. In contrast, several thousand adults with hiatal hernias have been seen during the same period. Most of the adults were in the older age group.

Of the 20 hiatal hernias encountered in children, two were of the paraesophageal type, one was a sliding hernia, and the remainder were of the short esophagus type. We suspect that in most instances hiatal hernias have a congenital basis in children, but sliding or paraesophageal hernia may not be an acquired hernia.

Hiatal hernias of the paraesophageal and sliding type should be repaired as soon as a diagnosis can be made. Most of our patients with short esophagus came to us with strictures. Treatment in these cases invariably presents problems and the usual surgical methods of repair for hiatal hernia cannot be adapted in cases of short esophagus.

In most of our patients with short esophagus and stricture, a conservative program consisting of dilations over a previously swallowed thread and medical measures such as routine use of antacids and elevation of the head of the patient's bed has been
RESUMEN
Las hernias hiatales son raras en infantes y en niños según lo revela el hecho de que sólo 20 enfermos menores de 15 años de edad se han visto con esta afección en la Clínica Mayo durante los últimos 9 años. Por el contrario, varios miles de adultos se han visto con hernias hiatales durante ese periodo. La mayoría de los adultos se encontraban entre los de mayor de edad.

De las 20 hernias hiatales encontradas en niños, dos fueron del tipo paraesofagiano, una fué de deslizamiento y el resto del tipo de esófago corto. Sospechamos que en la mayoría de los casos las hernias hiatales tienen una base congénita en los niños, pero el acortamiento de esófago puede ser o no un cambio adquirido.

Las hernias hiatales de los tipos paraesofagiano y de deslizamiento deben ser reparadas tan pronto como se haga el diagnóstico.

La mayoría de los enfermos con esófago corto, llegó a nosotros con estenosis. El tratamiento en estos casos presenta invariablemente problemas y los métodos habituales para la reparación de la hernia hiatal no pueden adaptarse a los casos de esófago corto.

En la mayoría de nuestros enfermos con esófago corto y estenosis, se sigue un plan conservador que consiste en dilataciones siguiendo a un hilo deglutido y a medidas médicas tales como el uso habitual de antiácidos y elevación de la cabecera del enfermo. Se han observado resultados satisfactorios en dos tercios de los enfermos tratados conservadoramente.

RESUMÉ
Les hernias hiatales sont rares chez les nouveau-nés et les enfants. Il est démonstratif qu'il n'y a eu que 20 malades âgés de moins de 15 ans atteints de cette affection à la Clinique Mayo dans ces neuf dernières années. Au contraire, plusieurs milliers d'adultes atteints de hernies hiatales ont été vus pendant la même période. La plupart des adultes étaient des gens déjà âgés.

Sur les 20 hernies hiatales rencontrées chez les enfants deux furent du type para-oesophagien, une fut une hernia par glissement et les autres furent celles qui appartiennent aux cas d'oesophage court. Les auteurs estiment que dans la plupart des cas, les hernies hiatales ont une origine congénitale chez les enfants, mais le raccourcissement de l'oesophage peut être ou ne pas être un phénomène acquis.

Les hernies hiatales du type para-oesophagien et du type par glissement devraient être traitées dès que le diagnostic en peut être fait. La plupart des malades porteurs d'esophage court avaient également un rétrécissement. Le traitement dans ces cas pose invariablement des problèmes et les méthodes chirurgicales habituelles de correction des hernies hiatales ne peuvent être adaptées aux cas d'oesophage court.

Chez la plupart des malades porteurs d'oesophage court et de rétrécissement, les auteurs ont utilisé un traitement conservateur consistant en dilatations sur un fil avalé auparavant, et des moyens médicaux tels que l'utilisation systématique d'anti-acides et l'élévation de la tête du lit du malade. Des résultats satisfaisants ont été obtenus dans deux tiers des cas traités par ces moyens conservateurs.

ZUSAMMENFASSUNG


REFERENCES