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PHARYNGOESOPHAGEAL (ZENKER'S) DIVERTICULUM: CASE REPORT

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SUMMARY

Pharyngoesophageal pulsion diverticulum is the most common of all oesophageal diverticuli and is characterised by dysphagia, regurgitation, gurgling sounds in the neck and aspiration. This is a report of an 80-year old female who presented with progressive dysphagia, weight loss and recurrent bouts of pneumonitis. A barium swallow showed a pharyngoesophageal diverticulum and an upper endoscopy confirmed a wide ostium and no other pathology. She underwent surgical pharyngoesophageal diverticulectomy and cricopharyngeal myotomy under general anaesthesia and made complete recovery with total relief of dysphagia.

INTRODUCTION

Pharyngoesophageal diverticulum, which is a pulsion diverticulum, is the most common of the oesophageal diverticuli(1). It is also called a Zenker's diverticulum after a German pathologist, F. A. Von Zenker who was the first to publish a full description of its clinical and pathological aspects(2). It is located posteriorly in the midline, in the Kallian's triangle above the cricopharyngeus muscle and below the inferior constrictor of the pharynx, and arises due to the high pressures generated during swallowing(3). These high pressures result into evagination of the mucosa and submucosa through the weakened area. The mouth of the diverticulum is in the midline and the sac projects laterally, usually into the left paravertebral region. The male/female ratio is 3:1 and most patients are over sixty years old.

Oesophageal motility is often abnormal and an associated hiatus hernia is common. Carcinoma in such a diverticulum is also a rare but recognised complication(4). Dysphagia is the commonest symptom and is related to the size of the diverticulum. Regurgitation of undigested food into the mouth, usually in the recumbent position and gurgling noises after a meal are common symptoms. Halitosis and a metallic taste in the mouth may also be present.

The dysphagia must be distinguished from that produced by malignant lesions although carcinoma of the oesophagus is rare in the cervical area. Oesophageal webs must also be considered and a web may occur in association with a pharyngoesophageal diverticulum. Recurrent regurgitation and aspiration leads to repeated pneumonitis while food may get trapped in the diverticulum and rarely lead to ulceration with bleeding, perforation with mediastinitis or a paraoesophageal abscess(5). The diagnosis is usually made with a barium swallow which demonstrates a smoothly rounded outpouching arising

posteriorly in the midline of the neck and endoscopy aids in ruling out other lesions(6). Endoscopy may be hazardous in inexperienced hands as instruments may enter the diverticulum with a risk of perforation.

Surgical therapy is the treatment most commonly offered and consists of excision of the diverticulum and cricopharyngeal myotomy. For small diverticuli myotomy alone and for large diverticuli excision alone may be adequate. Another option is to invert the diverticulum into the oesophageal lumen and closing the point of inversion. The complications of surgical therapy are rare and the prognosis is excellent. Recently other minimal invasive modalities of treatment have been used such as endoscopic division of the common wall between the cervical oesophagus and the diverticulum with either electrocautery, a laser or stapling device(3,7,8).

CASE REPORT

An eighty-year old female patient was referred with a five-year history of progressive dysphagia, regurgitation, repeated episodes of cough and weight loss. The dysphagia was progressive from the point of view of time taken to ingest a meal, which had increased considerably. The regurgitation was associated with aspiration and pneumonitis resulting in cough with production of whitish sputum. Her weight loss was marked although her appetite was normal. Her past medical history included a laparoscopic cholecystectomy, an appendectomy and tonsillectomy. She was a hypertensive, asthmatic and also had hypothyroidism. Her hypertension was controlled on oral antihypertensives, while she took salbutamol inhalers for her asthma and thyroxine as replacement therapy.

A barium swallow had revealed a pharyngo-oesophageal diverticulum (Figure 1). She then underwent an upper endoscopy to rule out any other pathology. The endoscopy confirmed a 3cm diameter pharyngoesophageal diverticulum with a wide ostium, no webs or tumours in the oesophagus and a normal stomach and duodenum.

Figure 1

A barium swallow radiograph showing a pharyngo-oesophageal diverticulum



A pharyngo-oesophageal diverticulectomy and cricopharyngeal myotomy were then performed under general anaesthesia through an oblique neck incision and a gastroscopie tip parked in the fundus of the diverticulum to aid delineation with the endoscope light. A tube drain was positioned to prevent complications of leakage. The patient made an uneventful recovery, and was discharged. Upon review a week later the patient had complete relief of her dysphagia.

DISCUSSION

Pharyngo-oesophageal diverticulum is a rare cause of dysphagia in our local set-up. In the authors practice this patient with a pharyngo-oesophageal diverticulum and dysphagia was the first in 150 patients with dysphagia(9,10). It is possible that after a barium swallow such patients are managed by Ear, Nose, Throat surgeons or cardiothoracic surgeons.

It is advisable to perform an upper endoscopy on patients with a pharyngo-oesophageal diverticulum in view of the small possibility of other pathology being present in the diverticulum(4). An upper endoscopy will also help to identify abnormal oesophageal motility and hiatus hernia with reflux, which are common findings in patients with a pharyngo-oesophageal diverticulum(8). The classical therapy still practiced widely is surgical transcervical diverticulectomy and cricopharyngeal myotomy(11,12). Lesser forms of surgical repair include diverticulopexy, imbrication and myotomy alone. Although these procedures do not restore normal anatomy, they have been reported to give acceptable results(3,13). Further studies have indicated that diverticulectomy should be performed for sacs greater than 5cm in diameter while diverticulopexy may be suitable for sacs with a 1 - 4cm diameter and that myotomy which represents an efficient form of therapy with little morbidity should always be performed(11,14).

Since 1950, however, ear, nose, throat surgeons have been treating pharyngo-oesophageal diverticuli with rigid scopes and cutting the bridge between the diverticulum and the oesophagus using monopolar diathermy(11). Of late various minimal invasive forms of therapy including

argon plasma coagulation, carbon dioxide laser and linear endostapler have been used endoscopically. These minimal invasive forms of therapy involve the endoscopic division of the common wall between the cervical oesophagus and the diverticulum and are gaining popularity because it achieves a good clinical outcome especially in high-risk patients. The argon plasma laser or the carbon dioxide laser are both used to divide the common wall and perform a cricopharyngeal myotomy resulting in the creation of a common cavity between the oesophagus and the lumen of the diverticulum(2).

As an advancement of the above technique an endoscopic staple-assisted oesophagodiverticulostomy is gaining popularity since it approximates and staples together the two parts of the incised common wall between the oesophagus and the diverticulum(6,7). Despite the numerous developments in the management of patients with a pharyngo-oesophageal diverticulum controlled comparative trials between these approaches are long overdue to identify the most suitable form of therapy.

REFERENCES

1. Clerici T., Nageli J. and Lange J. (Transoral video-endoscopic oesophageal diverticulostomy - a new treatment method for Zenker's diverticulum) Die transorale videoendoskopische oesophagodivertikulostomie - eine neue Behandlungsmethode für das Zenkersche Divertikel. *Ther Umsch* (Switzerland). 1993; **54**:515-520.
2. Hamoir M., Rombaux P., (Zenker's diverticulum. External or endoscopic surgery? (editorial)) Diverticules de Zenker. *Chirurgie externe ou endoscopique?*. *Presse Med* (France). 1997; **26**:1241-1242.
3. Sideris L., Chen L.Q., Ferraro P. and Duranceau A.C. The treatment of Zenker's diverticula: a review. *Seminars in thoracic and cardiovascular surgery* (United States). 1999; **11**:337-351.
4. Yekebas E., Eisenberger C.F., Jaekel K.T., Schmelzle R., Busch C.B. and Izbicki J.R. Der Chirurg; (Squamous epithelial carcinoma in a Zenker diverticulum) Plattenepithelcarcinom in einem Zenker-Divertikel. *Zeitschrift für alle Gebiete der operativen Medizin* (Germany). 2000; **71**:1513-1516.
5. Dokucu A.I., Fabre M., Otcu S., Sari I., Onen A., Ozturk H., Bukte Y., Cigdem K. and Azal O.F. Zenker's diverticulum in childhood: a new case. *Europ. J. Paediat. Surg.* (Germany). 2000; **101**:191-193.
6. Achkar E. Zenker's diverticulum. *Dig. Dis. (Switzerland)*. 1998; **16**:144-151.
7. Cook R.D., Huang P.C. and Richstmeier W.J. Endoscopic staple-assisted esophagodiverticulostomy: an excellent treatment of choice for Zenker's diverticulum. *Scher RL Laryngoscope* (United States). 2000; **110**:2020-2025.
8. Luscher M.S. and Johansen L.V. Zenker's diverticulum treated by the endoscopic stapling technique. *Asta oto-laryngologica. Supplementum* (Norway). 2000; **543**:235-238.
9. Jani P.G. and Mburugu P.G. Outpatient experience with oesophageal endoscopic dilation. *East Afr. Med. J.* 1998; **75**:422-424.
10. Jani P.G. Outpatient palliative therapy for advanced cancer of the oesophagus. *East Afr. Med. J.* 2000; **77**:456-458.
11. Feussner H. and Siewert J.R. (Traditional extraluminal operation for Zenker's diverticulum) Traditionelle extraluminale Operation des Zenker-Divertikels. *Der Chirurg; Zeitschrift für alle Gebiete der operativen Medizin* (Germany). 1999; **70**:753-756.
12. Mulder C.J. and van den Hazel S.J. (Intraluminal therapy for Zenker's diverticulum) Intraluminale therapie des Zenker-Divertikels. *Der Chirurg; Zeitschrift für alle Gebiete der operativen Medizin* (Germany). 1999; **70**:757-760.
13. Nguyen H.C. and Urquhart A.C. Zenker's diverticulum. *Laryngoscope* (United States). 1997; **107**:1436-1440.
14. Fraczek M., Karwowski A., Krawczyk M., Paczkowski P., Nyczkowski P., Pawlak B., Najnigier B. and Paluszkiwicz R. (Results of surgical treatment for Zenker's diverticula) Wyniki leczenia chirurgicznego uchyłkow Zenkera. *Wiad Lek* (Poland) 1997; **50**:269-272.

Letter to the Editor-in-Chief

Dear Sir,

AFRICAN ORTHOPAEDICS, WHAT FUTURE?

There is a dearth of trauma and orthopaedic surgeons in Africa. General surgeons undertake a very wide range of surgical work, including trauma and orthopaedics, while minor surgical procedures are carried out by suitably trained non-physician health workers(1). Neither of these groups of workers have been specifically prepared to deal with the wide scope and complexity of trauma and orthopaedic surgery in Africa. Outside South Africa and Egypt there are few training programmes in these disciplines. How can such a situation be improved?

The needs of Africa are great. There is a large complement of high-energy transfer trauma caused by road traffic accidents, assaults, industrial accidents and the many wars fought in the continent. "Old or neglected trauma" is common due to long distances travelled to get suitable treatment and late referral. Other conditions include late untreated paralytic poliomyelitis, cerebral palsy, paralysis due to injury and infection, congenital conditions, untreated late osteomyelitis and tuberculosis of joints and the spine(2). Most of the population is young, requiring a greater emphasis in paediatric trauma and orthopaedics. The elderly population are, also, afflicted with degenerative joint diseases.

Health budgets, generally grossly inadequate, are dwindling further with shrinking economies and rising external debt repayments. Trauma and orthopaedic surgery itself can be very expensive, leading to low affordability by individuals and poor resourcing by governments. Furthermore, AIDS is ravaging the continent with major consequences, including a rise in the incidence and prevalence of bone and joint infections. There is also an historic gross maldistribution of existing manpower in favour of large urban centres(1).

The spectrum of disease consequent to age distribution and environment, is very different compared to industrialised western countries and therefore a different practice is required. This practice should emphasise trauma management, which should be mainly conservative and paediatric orthopaedics given that there are many deformities, including club-foot, which need correction. Bone and joint infection and the impact of AIDS on surgical practice also require appropriate attention. Simplified, low cost appliances should be used(3). The surgeons should also be pro-active in trying to influence public policy in matters of road safety and safe public transport as this is a major source of trauma.

A surgeon for this environment, really, needs to be trained locally(2,4,5). While prevention of brain drain has been advanced as another reason to support local training(4), this has not been achieved in countries with such programmes. This problem can only be solved by improved recruitment and retention packages in the particular countries involved. The training programme must equip surgeons with those skills necessary to earn a living wage with, if needed, an income from private practice.

An appropriate programme could be modelled on the three-year course, such as those successfully used in Nairobi(6) and Lusaka's MMed (Surgery)(Gregori A., personal communication). The first year should include the study of Basic Sciences, including Anatomy, Physiology and Pathology. This year would also be used to gain A&E experience. The second year could rotate outside orthopaedics, with six months of General Surgery, three months of plastics and three months of rehabilitation, including spinal injuries, Orthotics and Prosthetics, Physiotherapy and Occupational Therapy. The third year should be used for rotations in Trauma and Orthopaedics and for completing a dissertation. There should also be teaching of Orthopaedic Basic Science, including bio-mechanics, material science and bio-statistics. Appropriate assessments need to be built into the programme to include the keeping of a logbook of operations

assisted, carried out under supervision and performed independently. This should ensure an adequate predetermined standard is reached by all graduands. A further period or working under supervision in an appropriate orthopaedic unit should complete the training before independent practice is allowed.

Such a programme should be able to produce surgeons who would use "inexpensive means to treat the many and not to pamper the few"(3). Those requiring specialist skills, such as arthroplasty, spinal surgery, advanced trauma management and reconstruction etc. should seek a fellowship where such would be available. These should mainly apply to those working in centres where resources can support such a practise.

A number of questions arise. What should be the standards of training and practise in an environment where the ability to survive is often prejudiced by poverty, famine or war? Who should run the training? Is there a role for visiting surgeons/surgical teams?

Professional standards are often set and maintained by the environment. These include societal needs and expectations, available facilities and resources. They should, therefore, not be based on standards prevailing in the industrialised west. These notwithstanding, the individual patient still has a right to enjoy a standard of care that is appropriate to the environment. Such standards should be predetermined and maintained by the local universities and the ministry of health.

The training itself should be designed and run locally in order to take care of the real needs of the local population. As trauma and orthopaedic surgical practice requires considerable human, physical and financial resources, such training may need to be provided regionally rather than nationally, in some cases.

Visiting surgeons can be very useful in assisting in training. This can be in the form of 'teach and do' planned visits or specific objectives, for examples club-foot surgery. There is, however, need for co-ordination as well meaning visitors could 'breach' local standards if they apply western solutions in some countries. Arthroplasty, for instance, which is a 'routine' procedure in the rich countries would be inappropriate in a country where any specific complications arising can not be dealt with adequately. There should, therefore, be cognisance of available facilities and resources along with the local need in terms of pathology and expectation. The visitors should, also, desist from importation of high-tech and unsustainable practice.

In conclusion, there is a need; there is a solution. The solution must be locally appropriate, produced, controlled and managed trauma and orthopaedic surgical training with help, where possible, from outside.

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REFERENCES

1. Wasunna A.E. Surgical Manpower in Africa. *Bull. Amer. Coll. Surg.* 1987; **72**:18-9.
2. Huckstep R.L. The challenge of the Third World. *Curr. Orthopaed.* 2000; **14**:26-33.
3. Vossberg A. The development of orthopaedic appliances and low cost aids in "least developed countries". *Prosthet. Orthot. Int.* 1985; **9**: 83-6
4. Eyre-Brook A.L. An appropriate approach to orthopaedics in developing countries. *Int. Orthop.* 1986; **10**:5-10
5. Silva J.F. The urgent need to train orthopaedic surgeons in third world countries. *Med. Educ.* 1979; **13**:28-30
6. Magoha G.A. and Ngumi Z.W. Training of surgeons in Kenya at the University of Nairobi teaching hospital. *East Afr. Med. J.* 1999; **76**:462-4