

nature of the minor asymptomatic leucopenia found in some patients. In the meantime frequent counts of white cells should be performed in patients receiving APD.

APD was supplied by Laboratorios Dr Gador.

- <sup>1</sup> Frijlink WB, Te Velde J, Bijvoet OL, Heynen G. Treatment of Paget's disease with (3-amino-1-hydroxypropylidene)-1,1-bisphosphonate (APD). *Lancet* 1979;i:799-803.
- <sup>2</sup> Nagant de Deuxchaisnes C, Rombouts-Lindemans C, Huaux JP, et al. Treatment of Paget's disease with the diphosphonate APD. A biological and radiological study. In: Donath A, Courvoisier B, eds. *Diphosphonates and bone*. Geneva: Medicine et Hygiene, 1982:303-27.
- <sup>3</sup> Fromm GA, Plantalech L, Casco C, Gonzalez D, Mautalen CA. 3-amino-1-hydroxypropylidene-1,1-bisphosphonate (APD) in the treatment of patients with Paget's bone disease. *Medicina (B Aires)* (in press).
- <sup>4</sup> Van Breukelen FJM, Bijvoet OL, Van Oosterom AT. Inhibition of osteolytic bone lesions by (3-amino-1-hydroxypropylidene)-1,1-bisphosphonate (APD). *Lancet* 1979;i:803-5.
- <sup>5</sup> de Deuxchaisnes CN, Devogelaer JP, Esselinchx W, Depresseux G, Rombouts-Lindemans C, Huaux JP. Non-hormonal treatment of osteoporosis. *Br Med J* 1983;286:1648.

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## Laser irradiation of tumours of the oesophagus and gastric cardia

A recent report from a London group indicated that tissue vaporisation by laser irradiation might offer reasonable palliation in cases of partial obstruction of the trachea or main bronchus due to bronchial carcinoma.<sup>1</sup> We have used the technique to maintain luminal patency in tumours of the oesophagus and gastric cardia.

### Patients, method, and results

To date, nine patients with a mean age of 78.6 years have been treated (see table). None was deemed suitable for surgical resection. A squamous cell carcinoma was discovered coincidentally in a patient with oesophageal varices (case 5), but in the remainder dysphagia was the main presenting symptom and endoscopy showed extensive obstruction of the oesophageal lumen.

The instrument used was the Molecron 8000 Neodymium YAG laser, set to deliver about 100 watts through a 600  $\mu$ m quartz fibre at pulses of 0.5-1.0 second. An aiming light is provided by a separate xenon source. The laser fibre is passed through the biopsy channel of a standard panendoscope fitted with a protective filter. Patients were sedated with 5-20 mg diazepam intravenously during the procedure. The mean energy applied was 2950 Joules (range 468-6390 Joules) and patients received on average

three laser treatments at intervals of two to four weeks. Provided that their general condition allowed, they were discharged home after about four days.

The table outlines the progress of the nine patients after treatment. In every case after application of the laser the patient was able to eat solid food. One patient (case 8) had previously been managed with an Atkinson tube for 18 weeks. During a holiday visit a food bolus had obstructed the tube, which was removed. Within 10 days there was complete blockage of the oesophagus, and it was only after the third laser treatment that a further tube could be inserted. In case 3 the patient originally underwent surgery for an apparently benign leiomyoma at the cardia. The lesion recurred and he required repeated transfusions. Over six months laser applications effectively reduced both tumour bulk and transfusion requirements. Later he underwent a further, successful operation, and histological examination showed a malignant leiomyosarcoma. At the time of reporting, the mean survival after first application of the laser was 15.8 weeks (range 3-39 weeks).

**Complications**—A 76 year old woman (case 2) presented with a 90% luminal obstruction, and after eight sessions of laser irradiation over 24 weeks an unsuccessful attempt was made to insert an Atkinson tube; this recurred in oesophageal perforation, and she died some days later. A 91 year old woman (case 7) died directly as a result of laser treatment. An initial treatment improved her ability to swallow but three weeks later the tumour, once again obstructing, was treated with the laser. Within two hours she complained of retrosternal discomfort, and oesophageal perforation (subsequently shown to be due to the laser) resulted in her death three days later.

### Comment

The object of palliation is to improve the quality of remaining life, with the knowledge that improving the nutritional state of the patient may also have a positive effect on survival. Atkinson and his colleagues demonstrated the value of endoscopic intubation,<sup>2</sup> and this procedure is now firmly established in the palliation of oesophago-gastric tumours. Some cases, however, may not be amenable to the technique.

Our series shows that even in advanced malignancy luminal patency can be maintained, albeit by repeated laser application, with little or no dietary restriction for the patient. The procedure was well tolerated and, although our patients were kept in hospital for four or five days after treatment, an overnight stay may be all that is required. Laser treatment and endoscopic intubation may be complementary rather than alternative procedures, although the experience in our case 2 indicates that careful thought must be given to the relative timing of the two techniques. We conclude that laser treatment is practicable and associated with good patient tolerance but that at present it should be considered only in terms of palliation, and it does not compete where radical surgical treatment is possible.

We are pleased to acknowledge the ready and enthusiastic help of Sister E C Smith and her staff on the gastrointestinal unit, and also the forbearance of the endoscopy theatre nurses during the early and difficult stages of the study.

<sup>1</sup> Hetzel MR, Millard FJC, Ayesh R, et al. Laser treatment for carcinoma of the bronchus. *Br Med J* 1983;286:12-6.

<sup>2</sup> Ogilvie AL, Dronfield MW, Ferguson R, Atkinson M. Palliative intubation of oesophago-gastric neoplasms at fiberoptic endoscopy. *Gut* 1982;23:1060-7.

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### Presentation and outcome in nine patients with gastro-oesophageal tumours after laser treatment

Case No	Sex and age (years)	Tumour site	Histological findings	Laser applications	Time scale (weeks)	Survival (weeks)	Subsequent progress
1	F 77	Oesophagus	Adenocarcinoma	1	0	39	Died after haematemesis
2	F 76	Oesophagus	Squamous carcinoma	8	23	24	Perforation after tube insertion
3	M 76	Cardia	Leiomyosarcoma	6	20	28*	Second attempt at surgical removal
4	M 82	Oesophagus	Adenocarcinoma	1	0	3	Death from pneumonia
5	F 65	Oesophagus	Squamous carcinoma	2	3	16*	Radiotherapy
6	F 77	Gastro-oesophageal	Adenocarcinoma	1	0	16*	Remained well
7	F 91	Oesophagus	Adenocarcinoma	2	3	4	Perforation by laser
8	F 85	Oesophagus	Adenocarcinoma	3	1	6*	Tube inserted
9	M 79	Gastro-oesophageal	Adenocarcinoma	2	1	6*	Remained well

\*Alive.