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Ophthalmic Manifestations in Asian Patients with Systemic Lupus Erythematosus

E Y Yap, K G Au Eong, K Y Fong, H S Howe, M L Boey, W M Cheah, P H Feng

ABSTRACT

Aim of study: To determine the spectrum and prevalence of ophthalmic manifestations of systemic lupus erythematosus (SLE) in Asian patients.

Methods: We performed a standardised ophthalmic examination on consecutive Asian patients with SLE referred from a tertiary rheumatology unit to an ophthalmology department.

Results: Seventy patients were included in the study. There were 66 females (94%) and 4 males (6%). The mean (range) age of the patients was 32.9 (9 – 67) years. Five patients (7%) had ophthalmic symptoms while 65 (93%) were asymptomatic. Eighty-three eyes of 45 patients had abnormal Schirmer's #1 test and 27 of these eyes of 17 patients also had concomitant rose bengal staining of the cornea and/or conjunctiva. Seventeen eyes of 9 patients had retinal vascular lesions. Fourteen of these eyes had mild microangiopathic retinopathy with best-corrected visual acuity (BCVA) 6/12 or better and 3 had retinal vaso-occlusive disease with BCVA worse than 6/12. Twenty-eight eyes of 14 patients had cataract and 3 eyes of 2 patients had raised intraocular pressure. Twelve eyes of 7 patients had BCVA worse than 6/12 because of optic neuropathy (4 eyes), posterior subcapsular cataract (4 eyes), retinal vaso-occlusive disease (3 eyes) and phthisis bulbi (1 eye). None had any eyelid lesion, extraocular motility disorder or retrochiasmal disorder of vision.

Conclusions: Asymptomatic dry eye is the most common ocular finding in patients with SLE. Sight-threatening complications of SLE include retinal vaso-occlusive disease and optic neuropathy.

Keywords: cataract, dry eye, keratoconjunctivitis sicca, optic neuropathy, retinal vascular disease

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INTRODUCTION

The ophthalmic manifestations of systemic lupus erythematosus (SLE) are protean. They range from lesions of the eyelid[1] and secondary Sjogren's syndrome[2] to sight-threatening disorders such as retinal vascular disease[3-8] and neuro-ophthalmic involvement[9-13]. Retinal vascular disease can present as cotton wool spots, intraretinal haemorrhages or retinal vaso-occlusive disease with poor visual outcome[6]. Severe retinal vaso-occlusive disease is reported to be significantly associated with central nervous system involvement[6]. Visual loss from neuro-ophthalmic involvement is often due to lupus optic neuropathy[9-13]. Other neuroophthalmic manifestations include cranial nerve palsies secondary to lupus microangiopathy and retrochiasmal disorders of vision. Choroidopathy is an uncommon cause of visual loss but cases have been documented in which there was serous elevation of the retinal pigment epithelium and sensory retina[14]. Decreased perfusion of the choroid has also been demonstrated in some patients with SLE[15].

Drugs used in the treatment of SLE can also affect the eyes. The mainstay of treatment of SLE is oral corticosteroids. Well-known complications of corticosteroid therapy include posterior subcapsular cataract formation[16] and glaucoma[17].

The ophthalmic manifestations of SLE in Asian patients have not been well studied. This study was performed to determine the spectrum and prevalence of ophthalmic manifestations of SLE in these patients.

PATIENTS AND METHODS

We requested physicians in a tertiary rheumatology unit to refer all Asian patients with SLE on follow-up in their department for an ophthalmic evaluation for this prospective cross-sectional study. The patients may or may not have any visual or ocular symptoms and comprised both in- and outpatients. All patients satisfied the 1982 revised criteria for the classification of SLE[18].

We evaluated all patients with a standardised ophthalmic examination which included: (a) detailed ocular and medical history; (b) determination of best-corrected visual acuity (BCVA); (c) external eye examination; (d) slit-lamp biomicroscopy; (e) examination of the cornea and conjunctiva following instillation of rose bengal in the conjunctival sac; (f) Schirmer's #1 test with topical anaesthesia; (g) Goldmann applanation tonometry; (h) ophthalmoscopy; (i) extraocular movement examination and, when indicated (j) Goldmann perimetry. Several trained state-registered nurses performed the visual acuity tests and Schirmer's #1 tests. Two ophthalmologists took the ocular and medical histories and conducted the rest of the ophthalmic examinations.

RESULTS

We evaluated 70 patients in this study. There were 66 females (94%) and 4 (6%) males. The female: male ratio was 16.5:1. The mean (range) age of the patients was 32.9 (9 – 67) years. There were 55 Chinese (78%), 10 Malays (14%), 4 Indians (6%) and one Eurasian (1%).

Table I shows the spectrum and prevalence of ophthalmic manifestations in these patients. Twelve eyes of 7 patients had BCVA worse than 6/12 as a result of various ocular pathologies (Table II).

Five patients (7%) had visual or ocular symptoms while 65 (93%) were asymptomatic. Four patients (6%) complained of decreased vision in one or both eyes. Two of them (patient nos. 16 and 49) had BCVA worse than 6/12 in both eyes due to optic neuropathy while one (patient, no. 66) had counting fingers vision in her right eye due to retinal vaso-occlusive disease (Table II). The fourth patient with a complaint of impaired vision had bilateral posterior subcapsular cataracts but her BCVA was 6/9 in both eyes. The fifth patient complained of bilateral ocular discomfort but her Schirmer's #1 test was normal and she did not have any abnormal staining of her ocular surface with rose bengal in either eye.

DISCUSSION

The prevalence of dry eye in patients with SLE varies from study to study depending on the criteria used to define dry eye. Eighty-three eyes of 45 patients in our series had readings of 10 mm or less in 5 minutes on Schirmer's # 1 test with topical anaesthesia. All of them had no complaints of ocular pain, discomfort, burning sensation, foreign body sensation or other eye irritation. Twenty-seven of these eyes in 17 patients also had concomitant rose bengal staining on the cornea and/or conjunctiva. If we use a combination of abnormal Schirmer's #1 test and rose bengal staining to indicate dry eye, the

Table I – Spectrum and prevalence of ophthalmic manifestations in SLE patients (n = 70)

Ophthalmic manifestation	No. of eyes (%)	No. of patients (%)
Schirmer's #1 test 10 mm or less in 5 minutes		
without rose bengal staining of conjunctiva and/or cornea	83 (59.3%)	45 (64.3%)
with rose bengal staining of conjunctiva and/or cornea	27 (19.3%)	17 (24.3%)
Posterior subcapsular cataract	28 (33.8%)	14 (20.0%)
Retinal vascular lesions		
Microangiopathic retinopathy	14 (10.0%)	7 (10.0%)
Retinal vaso-occlusive disease	3 (2.1%)	2 (2.9%)
Optic neuropathy	4 (2.9%)	2 (2.9%)
Raised intraocular pressure	3 (2.1%)	2 (2.9%)
Iridocyclitis	2 (1.4%)	2 (2.9%)
Eyelid lesion	0 (0%)	0 (0%)
Extraocular motility disorder	0 (0%)	0 (0%)
Retrochiasmal disorder of vision	0 (0%)	0 (0%)

Table II – SLE patients with best-corrected visual acuity worse than 6/12 in one or both eyes

Serial No.	Patient No.	Race	Age (years)	Sex	Eye	BCVA*	Major cause of decreased vision
1	16	Chinese	38	F	Right	6/18	Optic neuropathy
					Left	6/60	Optic neuropathy
2	49	Eurasian	42	M	Right	CF	Optic neuropathy (cataract also present)
					Left	CF	Optic neuropathy (cataract also present)
3	54	Chinese	42	F	Right	6/18	Posterior subcapsular cataract
					Left	6/18	Posterior subcapsular cataract
4	61	Chinese	59	F	Right	6/24	Posterior subcapsular cataract
					Left	6/18	Posterior subcapsular cataract
5	6	Chinese	30	F	Right	6/18	Retinal vaso-occlusive disease
					Left	CF	Retinal vaso-occlusive disease
6	66	Chinese	35	F	Right	CF	Retinal vaso-occlusive disease
7	3	Chinese	9	F	Left	NPL	Phthisis bulbi

* CF = counting fingers, NPL = no perception of light

prevalence of dry eye is 24% in our survey population (Table I). Asymptomatic dry eye is therefore the most common ophthalmic abnormality in our series.

Twenty-eight eyes of 14 patients had posterior subcapsular cataract. All patients had bilateral involvement and were on oral corticosteroid therapy (Table I). Ten of these patients were below 43 years of age. The majority of eyes with cataract (22 eyes) retained BCVA 6/12 or better. Four eyes had severe cataract causing BCVA worse than 6/12 (Table II). Two other eyes with cataract also had BCVA worse than 6/12 vision but the main cause of the poor vision was attributed to the underlying optic neuropathy (Table II).

Gold et al[3] reported that 3% of ambulatory SLE patients had cotton wool spots. Shearn and Pirofsky[4] and Lanham et al[5] found that 28% – 29% of hospitalised patients with SLE had retinal vascular findings. Seventeen eyes of 9 patients in our study population comprising both in- and outpatients had retinal vascular lesions (Table I). Fourteen of these eyes manifested as mild microangiopathic retinopathy with either cotton wool spots, mild retinal haemorrhages or both. All these eyes retained BCVA 6/12 or better. Only 3 eyes with retinal vascular lesions had severe retinal vaso-occlusive disease with BCVA worse than 6/12 (Table II). This is similar to the findings of Jabs et al[6] who reported that visual loss occurs in more severe retinopathy rather than in mild retinopathy.

Only 2 patients (3%) had neuro-ophthalmic involvement. Both had bilateral optic neuropathy (Tables I and II). This prevalence of clinical optic neuropathy is similar to the 1% – 2% reported in other series[2,19,20]. Optic neuropathy in SLE patients can present as optic neuritis, ischaemic optic neuropathy or slowly progressive visual loss[9,10,12,13].

Two patients had unilateral iridocyclitis (Table I). Both eyes also had retinopathy. One eye had mild retinopathy and BCVA 6/9. The other eye had BCVA counting fingers two feet because of retinal vaso-occlusive disease.

One eye had phthisis bulbi (Table I) which may have been due to severe involvement of the eye by the SLE disease process.

Glaucoma is a known complication of steroid treatment. Systemic administration of corticosteroids can cause raised intraocular pressure in some individuals, although less frequently than with topical administration[17]. Three eyes of 2 patients had raised intraocular pressures. One patient had intraocular pressure of 28 mmHg in both eyes while the other patient had an intraocular pressure of 25 mmHg in the right eye. Both patients had been on oral corticosteroid. The eyes did not show any glaucomatous visual field loss or optic nerve head changes.

None of the 70 patients had any eyelid lesion, cranial nerve palsy causing ocular motility disturbances or retrochiasmal disorders of vision.

CONCLUSION

Asymptomatic dry eye is the most common ocular finding in Asian patients with SLE. Sight-threatening complications of SLE include optic neuropathy and retinal vascular disease. Cataract and raised intraocular pressure occur as complications of corticosteroid therapy in patient with SLE.

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Experience of Percutaneous Endoscopic Gastrostomy at Massachusetts General Hospital – Indications and Complications

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ABSTRACT

Background: Percutaneous Endoscopic Gastrostomy (PEG) is a relatively new method to deliver nutrition to patients with inadequate caloric intake who have a functionally intact gastrointestinal tract.

Methods: This is a retrospective review of 58 consecutive patients who were referred to the Surgical Endoscopy Unit, Massachusetts General Hospital for placement of PEG in 1996. The current indications, methods, and results of PEG will be discussed.

Results: Of this series, all but one patient had the PEG successfully placed. Indications included head and neck cancer (29 patients); neurological disorders (21 patients); burns (3 patients); respiratory failure (2 patients), and aspirations (2 patients). Fifty-four percent of cases were performed with local anaesthesia. There was one complication (2%) with no procedural-related mortality.

Conclusion: PEG is an easy and safe procedure. It is a good alternative to provide enteral feeding in selected patients.

Keywords: enteral feeding, endoscopy, PEG

INTRODUCTION

Enteral feeding is the preferred route to provide nutrients for patients with inadequate caloric intake but with a functionally intact gastrointestinal tract. Until recently in Singapore, the most common method of feeding for patients who were unable to swallow was through a nasogastric tube. However, nasogastric feeding is associated with well-documented complications[1,2]. The nasogastric tube is least tolerated by patients. Local discomfort may cause frequent unintentional displacement of the tube especially in patients with impaired consciousness. This leads to discontinuation of nutrition, and more importantly, an increase risk of pulmonary aspirations.

Since its introduction by Gauderer and Ponsky in 1980[3], percutaneous endoscopic gastrostomy (PEG) has become widely accepted in the United States and United Kingdom, and is gradually becoming the procedure of choice for patients who require prolong enteral nutritional support[4]. This technique is simple and can be performed under local anaesthesia. Several large studies have also confirmed the safety of this procedure[5,6]. In contrast, traditional surgical gastrostomy commonly requires general anaesthesia, and carries significant morbidity and mortality[7].

In 1996, the first author was a clinical fellow at the Surgical Endoscopy Unit of Massachusetts General Hospital, Harvard Medical School, USA which has a close collaboration with the surgical nutrition service in the hospital. The aim of this study was to review the author's one-year personal experience on percutaneous endoscopic gastrostomy, and to discuss the current indications and methods of PEG placement.

METHODS

A prospective evaluation of patients referred to the Surgical Endoscopy Unit for percutaneous endoscopic gastrostomy (PEG) tube placement from January to December 1996 was performed. Perioperative data and outpatient records were reviewed. Most of the patients were referred by the relevant specialities, for example, neurology, or head and neck surgery. The patients were first evaluated preoperatively by one of the attending surgeons in the unit. The type of anaesthesia was decided according to the patient's medical condition and the surgeon's preference. Full blood count and clotting functions were measured, and any coagulation abnormality was corrected. Informed consent was obtained, and the patient was asked to fast overnight before the procedure.

The gastrostomy was performed in an endoscopy suite in our Same Day Surgical Unit, or in the main operative room if the PEG was performed in conjunction with other procedures. Each patient received a dose of intravenous cephalosporin or clindamycin preoperatively via an intravenous cannula just before sedation. For the majority of the patients, topical pharyngeal anaesthesia and intravenous sedation were used. Patients were asked to gargle 50 mL of 4% lidocaine solution, and 20% benzocaine spray was sprayed into the patient's throat. Intravenous sedation consisted of merperidine (equivalent to pethidine) and

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diazepam was initiated. The dosage was carefully titrated by an experienced nurse according to the patient's condition and level of consciousness. Pulse oximetry, blood pressure and cardiac rhythm were monitered throughout the procedure. For critically ill patients, an anaesthesiologist was present for the intravenous sedation. General anaesthesia was employed when a concomitant procedure was necessary (eg. tracheostomy), or when the patient was unable to co-operate with a local anaesthetic procedure.

The method of PEG placement followed the principles as described by Gauderer and Ponsky[3]. Two operators were required. The patient was placed in a supine position and the abdomen was cleaned and drapped. Simultaneously, a flexible gastroduodenoscope (GIF 100, Olympus, Lombard, Ill) was placed into the oesophagus. Occasionally, passage of Maloney dilators was required prior to the gastroduodenoscopy for patients with pharyngoesophageal strictures. The posterior pharynx was meticulously suctioned free of secretions under direct vision during every insertion and withdrawal of the endoscope. A diagnostic examination of the oesophagus, stomach, and duodenum was performed to exclude any significant lesions such as gastric outlet obstruction or disease of the anterior stomach wall. Next, the stomach was insufflated with air, and the anterior abdominal wall transilluminated. The site for the gastrostomy tube was selected by finger indentation on the stomach wall by the abdominal operator as viewed through the endoscope (Fig 1). We used the Ponsky Pull PEG kit (C.R. Bard, Inc., Billerica, MA). With local anaesthesia, a 1 cm skin incision was made on the proposed site. Through this incision, a 16-gauge angiocatheter was inserted into the stomach. The trocar was then removed and a wireloop was inserted into the stomach through the catheter. The wire was snared by the endoscopist (Fig 2). The endoscope and the wireloop were then removed through the mouth. A 20F mushroom-tipped catheter was tied to the end of the wireloop, and the catheter was withdrawn back down through the mouth, the stomach, and out through the abdominal wall. The endoscope was re-introduced into the stomach to confirm the position of the tip of the gastrostomy tube and to ensure haemostasis (Fig 3). The tube was then secured with an external bumper and four heavy silk sutures.

Patients were not fed through the gastrostomy tube for 24 hours. Instructions regarding the care of the feeding and the tube were given to the relative or the patient after the latter had regained consciousness. Antibiotics were continued intravenously for 24 hours for patients who were admitted. For outpatients, a five-day course of oral antibiotics was given.

The patients were seen on the first postoperative day or in the office after 10 days when the skin sutures were removed. When gastrostomy tube removal or change was needed, it was performed in the office without gastroscopy.

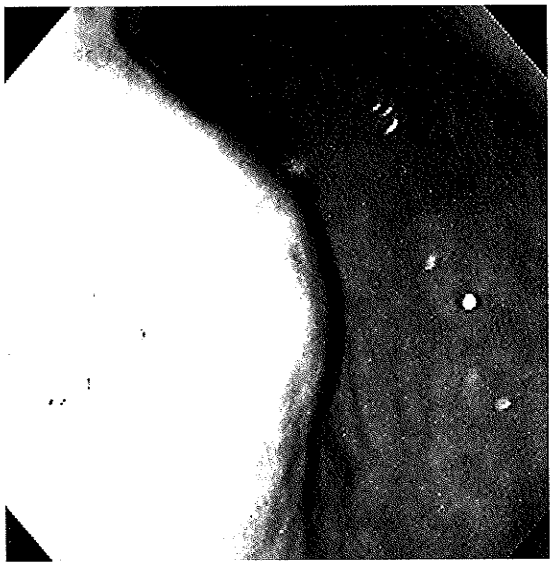

Fig 1 – Finger indentation as seen through the endoscope.

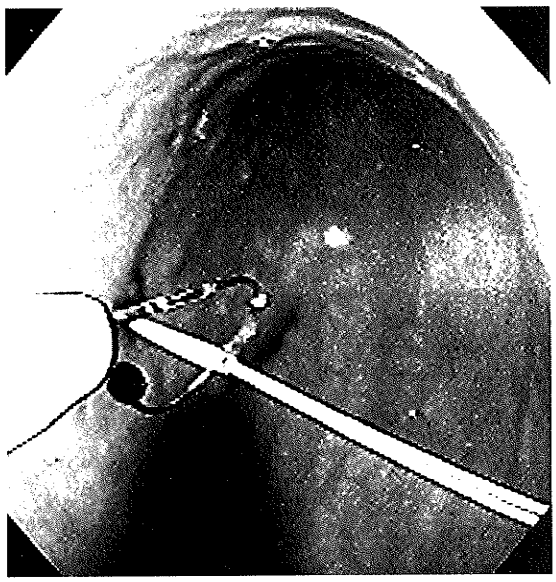

Fig 2 – The guidewire being snared.

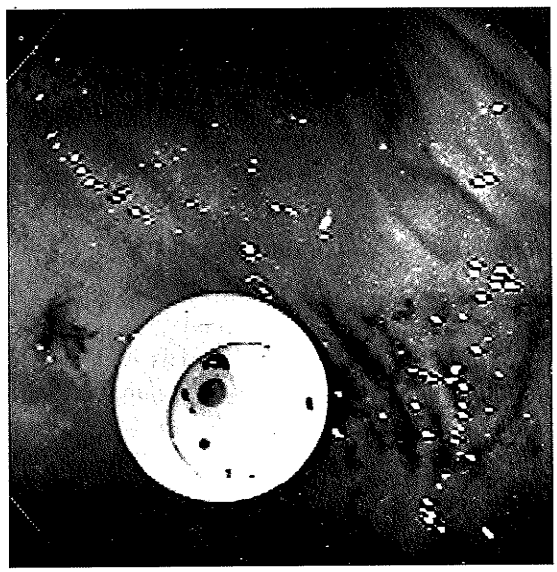

Fig 3 – The final position of the gastrostomy tube.

RESULTS

PEG was attempted on 58 patients during the one-year period. The median age of patients was 62.5 years (range: 22 – 92). There were 21 women and 37 men. The diagnoses and indications for PEG tube placement are summarised in Table I. In eight cases, the PEG was performed in conjunction with other procedures. Four patients had tracheostomy, while the rest of them had splitted skin graft, ventriculoperitoneal shunt, incisional biopsy or release of contracture respectively. Ten patients with head and neck cancer had the PEG before the resectional procedure, whereas 19 patients had tube placement done postoperatively. Twenty-two patients had PEG because of various neurological disorders (Table II).

Fifty-seven patients (98%) had the PEG successfully placed. One patient had failed PEG placement due to unsuccessful oesophageal intubation. A barium study revealed the presence of Zenkel's diverticulum. He then underwent a surgical gastrostomy. Thirty-one patients (54%) had the PEG performed under local anaesthesia and intravenous sedation. Most of these procedures were done as outpatients. In another 7 patients, intravenous sedation was monitored by an anaesthesiologist. General anaesthesia was required in 19 patients.

There was no death within 30 days of PEG in this series. Complication occurred in one patient (2%) who suffered from dysphagia secondary to multiple sclerosis. She developed aspiration pneumonia five days after tube placement but responded to antibiotic treatment.

Table I – Reasons for placement of PEG

Diagnosis	Number
Head and neck cancer	29
Neurological disorders	22
Respiratory failure	2
Severe burn	3
Chronic aspirations	2

Table II – Neurological disorders requiring PEG

Diagnosis	Number
Cerebrovascular accident	11
Head injury	5
Multiple sclerosis	1
Cerebral palsy	1
Alzheimer's disease	1
Cervical spondylosis	1
Brain tumour	2

DISCUSSION

The results of the study indicate that PEG is a safe and easy method to provide assess for enteral nutrition. Although many patients had head and neck cancer in our series, which might have high oesophageal or posterior pharyngeal stricture, only one patient had failed intubation. The high success rate of this procedure is in agreement with previous reports, in which the failure rate was below 10%[4,8,9]. Many of our patients had the procedure performed under local anaesthesia and as outpatients with a low complication rate.

When PEG was first described, it was mainly used for paediatric patients. Over the last decade, the procedure gradually gained acceptance and was applied in all age groups for various indications. Our technique of PEG placement follows the original principles described by Gauderer and Ponsky[3] which is known as the "Pull-string" method. Two other methods have been developed in the last decade. The second method involves pushing a feeding catheter into position over a guidewire from the mouth which is inserted transabdominally into the stomach (push-wire method)[10]. Another method involves the use of an introducer[11]. An introducer with a sheath is inserted percutaneously into the stomach over a guidewire. A balloon-tip catheter is then inserted through the sheath into the stomach. The balloon is inflated and this catheter serves as the gastrostomy tube. The "introducer" method prevents the contamination of oroesophageal bacteria or malignant cells. Although the last two methods have broad appeal, however published experience data are limited.

There is now strong evidence to suggest that PEG is the preferred method to provide enteral nutrition over surgical gastrostomy, or nasogastric tube. Several reports demonstrated reduced morbidity and mortality with PEG insertion, compared to surgical gastrostomy[12-14]. A prospective randomised trial showed that PEG had an economical advantage over surgical gastrostomy, though the difference in operative complications was not obvious[15]. Two randomised studies have been performed to compare nasogastric tube feeding with PEG for patients with dysphagic stroke[16-17]. In the study by Park et al, enteral feeding was provided for patients who had neurological dysphagia for at least 4 weeks by either PEG or nasogastric tube[16]. Gastrostomy patients received a significantly greater proportion of their prescribed feed than nasogastric group, and had more weight gain after seven days of feeding. Another randomised study confirmed the nutrition benefits of PEG over nasogastric tube feeding[17]. The study demonstrated that patients with nasogastric feeding had a higher mortality rate due to increased risk of pulmonary aspirations. Several studies have shown that patients on nasogastric tube feeding frequently removed the tube subconsciously and required resiting[1,16-18]. The tube displacement and exchange proportionally increase the risk of aspiration. In addition, the frequent discontinuation of tube feeding adversely affects the nutritional benefits of enteral feeding[2,16-17].

Several large series documented that the 30-day mortality and morbidity of PEG feeding to be around 1% and 10% respectively[5,6,12,19]. The early mortality rate of this procedure is closely associated with the underlying disease process[9]. We only perform PEG for patients who are expected to survive and require enteral feeding for at least four weeks. Common complications of PEG include wound infections, peritonitis, gastric haemorrhage and pulmonary aspiration. Several possible reasons account for the low complication rate (2%) in our series. Prophylactic antibiotics were routinely used in our patients, which can reduce the risk of wound infections[20]. Peritonitis is an avoidable but dangerous complication which occurs in 0% to 1.2% of PEG patients[5,6,10,19]. Premature removal of the catheter, leakage of gastric contents into the peritoneal cavity due to either insufficient apposition of the button to the stomach wall or pressure necrosis of the wall due to excessive pressure were the common reasons for peritonitis[5,10,19]. To avoid these problems, patients or their relatives were carefully educated about the proper care of the catheter. The tube was meticulously secured on the abdominal wall with strong silk ties and tapes. In addition, repeat endoscopy was performed when the catheter was secured to ensure that correct pressure was applied by the button on the stomach wall. Occasionally, traction of the button was applied momentarily to cease any bleeding from the mucosal surface of the gastrostomy. This manoeuvre reduced the possibility of gastrointestinal haemorrhage after the procedure.

One patient in our series developed pulmonary aspiration five days after PEG feeding. Aspirations can occur during PEG placement or any time after feeding starts. Mild sedation, use of local anaesthesia, and short operative time (usually less than 20 minutes) of PEG probably accounts for the low incidence of procedure-related aspiration[5]. However, careful precautions are still required to prevent this complication during tube feeding in chronic care settings[9].

PEG has been employed to provide enteral nutrition in a wide range of patient population. Previous prospective studies have shown the use of PEG in patients with neurological deficit, cystic fibrosis, and in elderly[16,17,21,22]. Our earlier study demonstrated an excellent result of PEG in patients with head and neck cancer before or after the resectional procedure[8]. Apart from providing nutrition, PEG has also been utilised for decompression of gastrointestinal obstruction due to carcinomatosis, and the results were promising[23].

CONCLUSION

In summary, our experience is in agreement with previous reports, in which PEG is a simple and safe procedure. Many of the procedures can be done under local anaesthesia on an outpatient basis. PEG should be the method of choice for patients who require long-term enteral nutrition.

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