



Figure 1 - A prototype of the reinforced silicone rubber tube for the prevention of restenosis following choanal atresia repair.

tracheal tube in an infant who twice previously had surgical repair followed by insertion of a stent fashioned from preformed PVC tracheal tube,<sup>5</sup> we are introducing this newly designed stent for use after choanal atresia repair.

The newly designed stent (**Figure 1**) is composed of 2 parallel tubes (one for each nostril) made of reinforced silicone rubber. The front part of each tube contains a hole on each side, so that the 4 holes are on the same line. A bridge consists of a hollow tube made of PVC, with a rectangular piece of sponge attached to it, is fixed by a strong thread, which passes through the holes, and the inside of the PVC tube. This is to stabilize the tube in the nostrils. The sponge protects the columella from undue pressure. The 2 tubes are connected posteriorly by a strip made of the same material without any metal reinforcement. Two solid-tipped PVC catheters (one for each tube) are used to position the stent in the nostrils through the mouth. The newly designed stent has several advantages over the available stents presently used following choanal atresia repair. The ready-made stent dramatically shortens the operative time, which is usually spent on fashioning other types of tubes during surgery. The presence of the imbedded metal wire within the wall of the 2 parallel tubes keeps their lumen patent, and makes suction of secretions easier. When inserted following surgery, the metal wire expands at body temperature; instead of collapsing in front of the attempts of the choanae to close again, the reinforced tube stands against the pressure created by restenosis. This spiral metal wire also adds flexibility to the stent easing negotiation of its way during insertion. In addition,

the presence of the attached piece of sponge to the bridge is likely to prevent pressure necrosis of the columella. Finally, this tube is produced from material previously tested, and licensed for use in humans (Z79-IT). This means that its presence in direct contact with mucous membranes for long periods does not initiate inflammatory toxic tissue reaction, which eventually results in scar tissue formation and possible restenosis. The tube sizes are 3, 3.5, 4, 4.5, and 5 mm internal diameter; the smallest size is for the neonate.

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## Efficacy of endorectal ultrasonography in preoperative staging of rectal carcinoma

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The most important factor in deciding on the surgical approach in patients with rectal cancer is the tumor stage.<sup>1</sup> Local excision with curative intent, and subsequent prevention of permanent colostomy, could be performed for early rectal cancers (T<sub>1</sub>N<sub>0</sub> and T<sub>2</sub>N<sub>0</sub>) that are less than 4 cm in diameter, those that involve less than 40% of the rectal wall circumference, and are located within 6 cm of the anal verge, with no evidence of nodal disease on preoperative evaluations (for example endorectal sonography).<sup>2</sup> Endoluminal ultra-

Table 1 - Pooled results of T-staging

Staging by endorectal sonography	n	Pathological staging					Acc (%)	Os (%)	Us (%)
		T1	T2	T3	T4				
T1	2	2	0	0	0	(85)	(0)	(17.6)	
T2	4	0	3	1	0				
T3	11	0	0	9	2				
T4	0	0	0	0	0				

Acc - accuracy, Os - overstaged, Us - understaged

sonography has been shown to be an accurate, and easy imaging modality in determining the depth of tumor invasion in rectal cancer.<sup>2</sup> Each layer of rectal wall can be identified, and its penetration by cancer described. Although lymph nodes can be visualized by ultrasonography, the presence of cancer within these nodes cannot be accurately predicted, as many visible nodes in sonography may be reactive rather than neoplastic.<sup>3,4</sup> We designed this study to evaluate the accuracy of endorectal sonography in preoperative staging of rectal cancers.

From September 2002 to December 2003, 17 patients (9 males and 8 females) aged 32-67 years (mean age of 58) who were scheduled for abdominoperineal resection (APR) or low anterior resection underwent endorectal ultrasound (EUS) using an 180°, and 7.5 MHz probe (Pie medical-scanner 260). All the patients had preoperative biopsy proven diagnosis of carcinoma of the rectum. The EUS studies were performed 2-7 days prior to the operation. For each patient, tumor dimensions, and depth of mural penetration was assessed. Ultrasonographic staging (UT) was performed using the method described by Hildebrandt and Feifel.<sup>5</sup> All the patients were operated, and the resected specimens were sent for pathological assessment. The tumors were classified using the tumor node metastasis (TNM) staging method. The TNM stages of the tumors obtained by EUS, and histopathological examination were compared using the student t-test. Statistical analysis was carried out using the student t-test, and  $p < 0.05$  were considered significant.

The tumors were recorded sonographically, T<sub>3</sub> in 11 patients, T<sub>2</sub> in 4, and T<sub>1</sub> in 2 patients (Table 1). Pathology reports compared to the endorectal ultrasound results are also shown in Table 1. According to the EUS, 4 patients with the stage of T<sub>3</sub> had positive lymph nodes, however, in

pathological examination, 9 patients had positive lymph nodes. Overall accuracy in staging depth of infiltration was 85%. Overstaging occurred in 0% of patients, whereas understaging occurred in 17.6%.

For rectal cancer, the decisions regarding neoadjuvant therapy, radical resection, or local excision depends on accurate preoperative staging.<sup>2</sup> Multiple modalities have been suggested, and are now available to stage rectal cancer. The most important modalities are digital rectal examination, computed tomography (CT), magnetic resonance imaging (MRI), and EUS. Digital rectal examination accuracy varies from 50-88% for depth of penetration.<sup>2</sup> Accuracy of CT varies from 60-94% for depth of penetration, and from 54-70% for lymph node metastases.<sup>2,4</sup> Accuracy of MRI varies from 66-92% for depth of penetration and from 60-90% for lymph node metastases.<sup>2,4</sup>

Ultrasonography became useful in rectal pathology by endoluminal probes. In this manner, endorectal ultrasound or endoscopic ultrasound was performed. The depth of invasion of rectal cancer, known to be an important variable in deciding on the method of treatment, can be accurately determined by endoluminal sonography.<sup>1,4</sup> Endorectal ultrasound varies from 62-92% for depth of penetration, and from 64-88% for lymph node metastases.<sup>1,4</sup> In our study, the accuracy of EUS for staging was 85%. This result may be obtained as most of our patients were in stage 3. Most recent studies have obtained similar results to our study. Herzog et al<sup>3</sup> performed a thorough study on the accuracy of EUS in staging of rectal tumors (early stages such as T<sub>1</sub>N<sub>0</sub> or T<sub>2</sub>N<sub>0</sub>). He obtained an overall accuracy in staging depth of infiltration of 89%. Overstaging occurred in 10.2%, and understaging in 0.8%. Tumors of the lower rectum were incorrectly staged in 16.7%, whereas tumors of the middle, and upper rectum had an incorrect staging in 6.3% ( $p < 0.001$ ).<sup>3</sup>

The EUS has good accuracy in staging; however, like all radiology instruments they have overstaging and understaging. A disadvantage of EUS is the inconsistency in discriminating deep intramural (T<sub>2</sub>) extensions from early, focally, or microscopically transmural (T<sub>3</sub>) penetration.<sup>4</sup> Another disadvantage of EUS is the low accuracy rate in diagnosing metastatic lymph nodes.<sup>4</sup> An MRI, with the use of an endorectal coil may have a slightly higher accuracy for detecting lymph nodes.<sup>4</sup>

Comparing preoperative transrectal ultrasound, and CT staging in 89 consecutive patients has shown that sonography is superior to CT scan in assessment of tumor extent, and in detection of lymph node involvement.<sup>4</sup> Kim et al<sup>4</sup> found that endorectal sonography had an accuracy of 81.1%, a sensitivity of 53.3%, and a specificity of 75% in preoperative staging of rectal carcinoma whereas for

CT, accuracy was 56.5%, sensitivity was 56%, and specificity 41.9%.<sup>4</sup>

In conclusion, EUS has the advantage of being portable, and often office-based, requiring only minimal preparation, and is well tolerated by the patient. Endorectal ultrasound has been shown to be the most accurate method for the determination of the depth of wall penetration, and is comparable for lymph node metastases. Therefore, it is an accurate method to preoperatively stage rectal cancers.

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## Oxidative stress in patients with premature hair grayness

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Grayness of hair is usually a manifestation of the aging process, and is due to progressive reduction in melanocyte function. Premature grayness of hair (PGH) has been defined as onset of grayness before 20 years of age in Caucasoid, 25 years of age in Asian and 30 years of age in Negro.<sup>1</sup> The PGH is considered to be a variant of vitiligo that could be seen together or separately.<sup>2</sup> The

systemic changes that could be seen in vitiligo, like elevated glycosylated hemoglobin, and abnormal lipoproteins, were also observed in PGH.<sup>3</sup> Several reports suggest that free radicals damage, and oxidative stress are involved in the etiopathogenesis of vitiligo.<sup>4</sup> The aim of the present study is to evaluate the oxidative stress, and free radicals damage in patients with PGH.

Sixty patients with PGH were included in this study, and were selected from outpatient clinic at the Department of Dermatology and Venereology, Baghdad Teaching Hospital, Iraq. The study conducted between April 2002 and April 2004. Their ages ranged between 11-29 years with a mean  $\pm$  standard deviation (SD) of  $24.55 \pm 5.19$ . Of those 60 patients, 18 (30%) were females, and 42 (70%) were males. The severity of grayness of hair was graded according to the following: mild grayness: grayness of hair that can be noticed with difficulty, moderate grayness: grayness of hair that could be seen obviously with naked eye, severe grayness: grayness of hair that involved most of the scalp, and beard area in males. Eighteen patients (30%) had mild grayness, while 15 (25%) patients had moderate grayness, and other 27 (45%) patients had severe grayness. Patients with duration of grayness less than 2 years were considered as cases of acute PGH (15 patients), while patients with duration of grayness more than 10 years were considered as cases of chronic PGH (21 patients). A total of 60 healthy individuals were considered as control. They comprised of 16 (26.7%) females, and 44 (73.3 %) males. Their ages ranged between 15-30 years with a mean  $\pm$  SD of  $22.96 \pm 3.86$  years. Informed consent was obtained from all patients and controls.

Blood samples were collected from each patient, and control. Ten ml of venous blood was collected using 10 ml disposable syringes, after separation, the serum stored, and kept for further analysis. Serum glutathione, caeruloplasmin, malondialdehyde (MDA), copper, and zinc were measured. The significant difference between mean values was estimated by student's t-test. Pearson correlation coefficient (r) was used to test the relation between 2 parameters. The ANOVA test was used to compare the mean of parameters between grades. Serum MDA ( $p < 0.0001$ ), caeruloplasmin ( $p < 0.001$ ), and copper ( $p < 0.01$ ) were significantly higher in PGH than control while glutathione ( $p < 0.001$ ), and zinc ( $p < 0.001$ ) levels were significantly lower in patients than control. (Table 1). When patients with PGH were compared according to the severity of grayness (grades), serum glutathione were significantly higher in grade 3 (severe) PGH ( $p < 0.05$ ), while other parameters shows no significant difference between grades. When oxidative stress parameters were correlated