

Abstract Selection

Nasal septum lesions caused by chromium exposure among chromium electroplating workers. Lin, S. C., Tai, C. C., Chan, C. C., Wang, J. D. Center for Research of Environmental and Occupational Diseases, National Taiwan University, College of Public Health, Taipei, Republic of China. *American Journal of Industrial Medicine* (1994) August, Vol. 26 (2), pp. 221–8.

A chromium electroplating worker, suffering from epistaxis during work, was found to have nasal septum perforation. To determine the etiology and prevalence of nasal septum lesions, we conducted a survey of seven chromium electroplating factories and examined 79 workers. Forty workers from three aluminium electroplating factories were also enrolled as the reference group. Subjects were thoroughly examined by an otolaryngologist and each of them provided a blood and urine sample. A questionnaire interview regarding symptoms of the upper respiratory tract, past medical history, life style, and work history was also conducted. Air chromium concentrations were measured by taking area samples for 4–6 hours. Based on field observation and chromium measurements, we divided chromium electroplating into three different exposure zones: workers directly dealing with electroplating tanks ($n = 31$), other process workers ($n = 29$), and office workers and drivers ($n = 19$). Among the 79 chromium electroplating workers, there were 16 cases of nasal septum perforation, and 42 with either scar formation or ulceration; 10 chromium electroplating workers developed skin ulcers after performing chrome plating. No workers from aluminium electroplating factories had any nasal septum or skin abnormalities. There was a consistent trend between the degree of chromium exposure and the signs and symptoms related to the nose, throat, and skin. Immediate improvement of occupational hygiene is warranted. Author.

Resections of the upper aerodigestive tract for locally invasive thyroid cancer. Ballantyne, A. J. Department of Head and Neck Surgery, University of Texas M.D., Anderson Cancer Center, Houston 77030. *American Journal of Surgery* (1994) December, Vol. 168 (6), pp. 636–9.

BACKGROUND: In view of the indolent nature of most cancers of the thyroid, particularly of the papillary and follicular variety, the decision to remove a segment of the upper aerodigestive tract when the cancer is either close to or invading this area is a difficult one. It was felt relevant to review the experience at the M.D. Anderson Hospital to see when such resections were necessary, how they were repaired, and the survival rates. **PATIENTS AND METHODS:** Of the 1098 patients with cancers of the thyroid treated surgically at M.D. Anderson Cancer Center from 1954 to 1993, 46 underwent resections of some portion of the upper aerodigestive tract for invasive cancer. These included 35 patients who had histories of prior surgical treatment with or without radiation or radioactive iodine therapy. The operations included 27 total and five partial laryngectomies, one circumferential and 13 partial resections of the trachea, and five circumferential and 10 partial esophagectomies. Several patients had combinations of these procedures. Details of the repairs are provided. Postoperative radiation or radioactive iodine treatment was administered when indicated. **RESULTS:** Local recurrence was infrequent. Most deaths occurred from either pulmonary metastasis or causes other than the cancer. The five-year survival rate for all patients exceeded 50 per cent. More than 70 per cent of patients with papillary and follicular cancers survived for five years, and some for up to 30 years. **CONCLUSIONS:** Although it cannot be stated with any degree of certainty if a resection of a portion of the upper aerodigestive tract should be done at the time of the initial surgical procedure, it is apparent that there are some situations in which the resection should be done because of severe local problems. A variety of methods of repair are available, and the survival rate is greater than 50 per cent for all such procedures, with those having the papillary and follicular variety surviving for five years in more than 70 per

cent of cases. Patients can exist with severe local problems for a number of years and it is sometimes the patient who decides when the resection should be done. Author.

Duplex scanning replaces arteriography and operative exploration in the diagnosis of potential cervical vascular injury. Fry, W. R., Dort, J. A., Smith, R. S., Sayers, D. V., Morabito, D. J. Department of Surgery, University of California, Davis East Bay, Oakland. *American Journal of Surgery* (1994) December, Vol. 168 (6), pp. 693–5; discussion 695–6.

BACKGROUND: The pursuit of a diagnosis is more aggressive in suspected cervical vascular injury than in extremely vascular proximity injury, since the complications of missing the neck injury may result in irreversible neurologic damage. Most institutions use arteriography and operative exploration, but these modalities identify only 10 per cent of cervical vascular traumas. While duplex scanning is the screening test of choice for carotid occlusive disease, few published reports have described experience with this modality in cervical vascular trauma. **PATIENTS AND METHODS:** To determine if duplex scanning can replace arteriography or operative exploration as the initial screening modality in the assessment of potential cervical vascular trauma, we performed a prospective evaluation in two parts. First, we used duplex scanning and cervical arteriography, concomitantly, to rule out injury in 15 patients. We then used duplex scanning alone in 85 patients, reserving arteriography for cases in which the scan revealed an arterial injury. **RESULTS:** Duplex scans and arteriography and operation diagnosed cervical vascular trauma equally well. Eight injuries were identified in all areas of the cervical arterial tree. No duplex scans have been falsely negative or falsely positive. Use of duplex scans instead of arteriography saved \$1,252 per case. **CONCLUSIONS:** Duplex scanning detects cervical vascular injuries as effectively as arteriography or operation, and is faster and less expensive. This approach expands the utility of diagnostic ultrasound in the evaluation of trauma patients. It has become the procedure of choice for diagnosing cervical vascular trauma at our institution. Author.

Increased expression of basic fibroblast growth factor in squamous carcinogenesis of the head and neck is less prevalent following smoking cessation. Hughes, C. J., Reed, J. A., Cabal, R., Huvos, A. G., Albino, A. P., Schantz, S. P. Department of Head and Neck Surgical Service, Memorial Sloan-Kettering Cancer Centre, New York, New York 10021. *American Journal of Surgery* (1994), November, Vol. 168 (5), pp. 381–5.

Basic fibroblast growth factor (bFGF), a potent angiogenic peptide, is thought to provide a growth advantage to a number of tumours including squamous cancer of the head and neck. The purpose of this study was to demonstrate the *in situ* expression of bFGF in lesions of the upper aerodigestive tract (UADT) and to correlate that with clinical parameters and known risk factors for carcinoma. On surgical specimens from 52 patients, we used a colorimetric *in situ* hybridization assay to determine the expression of bFGF mRNA in normal and pathologic conditions commonly seen in squamous mucosa. The extent of reactivity for the bFGF transcript was recorded on a subjective scale from 1+ to 3+, based on the visual intensity of labelling. These findings were subsequently correlated with clinical data. Basic fibroblast growth factor mRNA was detected at low to moderate levels in all sections of normal mucosa, with no distinction between patients with or without squamous cancer. Inflamed mucosa had comparatively strong expression of bFGF mRNA. Among lesions implicated in the stepwise nature of squamous carcinogenesis, we found increases in bFGF expression that were most significant at the level of carcinoma *in situ*, persisting through the invasive and nodal metastatic stages of the disease ($P < 0.005$). Interestingly, those increases were significantly less frequent among former smokers ($P = 0.02$). We have established the expression of

bFGF mRNA in normal, inflammatory, and neoplastic tissue within the UADT. Furthermore, we note for the first time that increased expression is associated with the acquisition of more aggressive biological behaviour in squamous carcinogenesis. Author.

Cervical metastases of occult origin: the impact of combined modality therapy. Davidson, B. J., Spiro, R. H., Patel, S., Patel, K., Shah, J. P. Department of Surgery, Memorial Sloan-Kettering Cancer Centre, New York, New York 10021. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 395–9.

BACKGROUND: We have updated our experience with metastatic carcinoma to the neck of occult origin to assess whether increasing use of adjunctive radiation therapy has had a significant impact. **METHODS:** This retrospective review of 115 patients treated between 1977 and 1990 includes 73 (63 per cent) with squamous cell carcinoma. These 73 patients were analyzed for survival, control of disease in the neck, and incidence of subsequent or primary tumours. **RESULTS:** There has been no change in the proportion of patients with advanced neck disease (N2/N3 = 52; 71 per cent) when compared to our last report. Surgery included comprehensive neck dissection in 59 (81 per cent) and adjunctive radiotherapy was employed in 54 (83 per cent of surgically treated patients). Primary carcinomas within the head and neck were identified subsequently in nine (12 per cent) patients, including four of 11 (36 per cent) who did not have adjunctive radiotherapy and five of 54 (nine per cent) who did ($P = 0.038$). Control of the treated neck (54/73; 74 per cent) has improved significantly ($P = 0.005$) when compared to our earlier experience (37/74; 50 per cent), and this was most apparent in those with extensive neck disease. However, cumulative survival at five years (45 per cent) was not significantly different from that previously reported. **CONCLUSION:** Our data support the increased use of adjunctive radiation therapy for metastatic squamous cell carcinoma in the neck of occult origin. Control of neck disease has improved and the likelihood that a primary will be identified has been reduced, but there has been no improvement in survival when compared to historical controls. Author.

Evaluation of 107 therapeutic and elective parotidectomies for cutaneous melanoma. O'Brien, C. J., Petersen-Schafer, K., Papadopoulos, T., Malka, V. Sydney Melanoma Unit, Royal Prince Alfred Hospital, NSW Australia. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 400–3.

A total of 107 patients with cutaneous melanoma had parotidectomies performed by one surgeon over a six-year period. Twenty-five parotidectomies were therapeutic and 82 were elective. All elective and 18 therapeutic operations entailed superficial lobectomy, and there were four total and three subtotal therapeutic operations. The facial nerve was completely preserved in 97 operations, partially sacrificed in eight, and totally sacrificed in two. Neck dissection accompanied all but one parotidectomy. The most common postoperative complication was facial nerve dysfunction. A total of 33 of 82 patients had lower lip weakness between six months and five years after elective parotidectomy. Lymph nodes were pathologically positive in the parotid gland in 27 patients and in the neck in 15 patients. Ten patients had both parotid and neck metastases. Among patients with positive melanoma in the parotid gland who were observed for at least one year, 16 received adjuvant postoperative radiotherapy (550 cGy \times five fractions) and nine did not. Parotid recurrences developed in 1/16 irradiated and four/nine nonirradiated patients but this difference was not significant. Overall melanoma-specific survival at five years was 64 per cent, with nodal involvement in the neck or parotid gland significantly worsening prognosis (40 per cent survival at five years). The roles of elective lymphadenectomy and adjuvant radiotherapy are now being examined in prospective randomized clinical trials. Author.

Advanced patient age should not preclude the use of free-flap reconstruction for head and neck cancer. Bridger, A. G., O'Brien, C. J., Lee, K. K. Department of Head and Neck Surgery, Royal Prince Alfred Hospital, Sydney, New South Wales, Australia. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 425–8.

BACKGROUND: Microvascular free flaps have become the principal form of reconstruction after the radical excision of head and neck malignancies at Royal Prince Alfred Hospital, Sydney. This surgery is time consuming, complex, and may be regarded as inappropriate in some elderly patients. This paper examines whether or not elderly patients (aged 70 years and older) are unduly disadvantaged by this form of reconstruction in the management of head

and neck malignancy. **PATIENTS AND METHODS:** Two groups of patients were retrospectively studied: 26 patients aged 70 years or older (group 1) and 91 patients aged less than 70 years (group 2). All patients had a free-flap reconstruction after radical excision of head and neck malignancies between 1987 and 1993. The anatomic distributions of cancers and clinical stages were similar in both groups. The two groups were examined for preoperative medical risk factors, postoperative complications, length of hospital stay, and ability to tolerate an oral diet. **RESULTS:** In group 1, 81 per cent of patients had at least one preoperative risk factor, with 42 per cent cardiac and 27 per cent respiratory risks. In group 2, 51 per cent of patients had preoperative risks, 11 per cent cardiac and 22 per cent respiratory. Postoperatively, 42 per cent of patients in group 1 had surgical complications, versus 37 per cent in group 2. Postoperative medical complications were 54 per cent in group 1 and 29 per cent in group 2. Median hospital stay was 22 and 23 days, respectively. **CONCLUSION:** There was no statistical difference in the postoperative surgical complication rates, and, when stratified for premorbid factors, the overall postoperative complication rates between the two groups were also not statistically significantly different. This suggests that age alone should not exclude a patient from radical surgery for head and neck cancer with free-flap repair. Author.

Gene mutations in saliva as molecular markers for head and neck squamous cell carcinomas. Boyle, J. O., Mao, L., Brennan, J. A., Koch, W. M., Eisele, D. W., Saunders, J. R., Sidransky, D. Johns Hopkins Hospital, Department of Otolaryngology Head and Neck Surgery, Baltimore, Maryland 21287. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 429–32.

BACKGROUND: Cancer is caused by the accumulation of mutations that activate proto-oncogenes and inactivate tumour suppressor genes. The result is a clonal expansion of genetically identical daughter cells that eventually become clinical malignancies. The specific mutations acquired by the progenitor cell are like a fingerprint carried by each cell of the tumour. These mutations can serve as very specific markers for the presence of tumour cells in a background of normal cells. **METHODS:** Mutations in the p53 gene recovered from head and neck squamous cell carcinomas were sequenced, and these altered DNA sequences were used retrospectively as tumour-specific genetic markers for cancer cells in the patient's saliva. Cloned p53 sequences amplified by the polymerase chain reaction from DNA extracted from banked preoperative saliva specimens were screened for the presence of tumour-specific mutations using radiolabelled oligonucleotide probes. **RESULTS:** We identified tumour-specific mutations in preoperative saliva samples of five of the seven patients evaluated (71 per cent). **CONCLUSIONS:** These results suggest a potential for clinical applications of this novel approach to cancer detection using gene mutations as molecular markers for carcinomas. Author.

The radial forearm free flap for head and neck reconstruction: a review. Evans, G. R., Schusterman, M. A., Kroll, S. S., Miller, M. J., Reece, G. P., Robb, G. L., Ainslie, N. Department of Reconstructive and Plastic Surgery, University of Texas M.D. Anderson Cancer Centre, Houston, Texas. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 446–50.

BACKGROUND: The radial forearm free flap has become a work-horse flap in head and neck reconstruction. Its lack of bulk, ease of dissection, vascularity, and malleability are among its many advantages. **PATIENTS AND METHODS:** A review of 157 radial forearm free flaps performed in 155 patients between March 1988 and June 1994 at The University of Texas M.D. Anderson Cancer Centre was undertaken to determine outcome. Patient age ranged from 22 to 80 years (mean 56). There were 79 men and 76 women. Follow-up ranged from two to 75 months. The most prevalent neoplasm was squamous cell carcinoma ($n = 129$). **RESULTS:** The most frequent tumour staging was T₃, N₀, M₀. Various defects were observed; however, those requiring floor-of-mouth coverage were most common ($n = 95$). Partial or segmental mandibular resection was seen in 42. An osseous component was included in the radial forearm flap in nine patients, and 64 patients had undergone some form of previous tumour resection. Fifty-seven patients received preoperative irradiation and 52, postoperative. The internal jugular vein ($n = 131$) and the external carotid artery ($n = 134$) were the most frequent recipient sites for microvascular anastomosis. Vein grafts were needed in four cases, and end-to-side anastomoses were most commonly performed. Total flap loss occurred in seven cases (4.5 per cent) and partial flap loss in one (0.6 per cent). For total flap loss, salvage was accomplished by a second radial forearm free flap in two cases and

alternative rotational flaps in five. Other complications (infection, hematoma, fistula formation, etc.) were seen in 34 per cent. Donor-site difficulties were seen in 21 cases. **CONCLUSION:** The radial forearm free flap offers a variety of reconstructive options for the head and neck. Its low flap loss and complication rates offer the best choice for oral lining restoration if bulk is not required. Author.

Angiosarcoma of the head and neck. Lydiatt, W. M., Shaha, A. R., Shah, J. P. Department of Surgery, Head and Neck Service, Memorial Sloan-Kettering Cancer Center, New York, New York 10021. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 451–4.

BACKGROUND: Angiosarcoma (AS) is an uncommon, highly aggressive tumour with a poor prognosis. **METHODS:** To study the impact of various treatment modalities, namely surgery, radiation, and chemotherapy, we reviewed our experience with AS of the head and neck. **RESULTS:** From 1978 through 1992, we treated 13 men and five women with AS (median age 67 years). Sixteen tumours occurred on the scalp and face and two in the oropharynx. Two patients presented with cervical metastases, and a third had subsequent nodal involvement. Primary surgery was used in nine patients, including one who received adjunctive systemic doxorubicin hydrochloride, and two who received adjunctive radiotherapy. The tumours of nine patients were unresectable: four were treated with intra-arterial doxorubicin hydrochloride; and five, with systemic doxorubicin hydrochloride. Twelve patients (67 per cent) died of disease an average of 25 months after diagnosis. Overall five-year survival was 33 per cent, but only 20 per cent of the patients were disease free. Size of the tumour was an important predictor of survival, as all patients with a lesion >10 cm died of disease, compared with 67 per cent with a lesion <10 cm. Four of six patients treated with wide local excision for lesions <10 cm survived five years. **CONCLUSIONS:** We recommend surgery for resectable lesions with postoperative radiation for unsatisfactory margins, large tumour size, deep extension, and multicentricity. Elective treatment of the neck does not appear warranted. Author.

Subtotal laryngectomy with cricothyroidopexy for supraglottic carcinoma: review of 61 cases. Chevalier, D., Piquet, J. J. Department of Otolaryngology, Hôpital Claude Huriez, Lille, France. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 472–3.

BACKGROUND: Subtotal laryngectomy with cricothyroidopexy is a functional laryngectomy suitable for treatment of supraglottic carcinomas. This procedure consists of resection of the thyroid cartilage, the paraglottic space, the epiglottis, and the entire pre-epiglottic space. The cricoid cartilage, the hyoid bone, and at least one arytenoid cartilage are spared. **METHODS:** Between 1973 and 1990, we used subtotal laryngectomy with cricothyroidopexy to treat 61 successive patients with supraglottic carcinomas. The data were collected by a review of patient records. The cancers were stages T₁ (2), T₂ (41), T₃ (14), and T₄ (4), according to the 1979 American Joint Committee on Cancer staging criteria. **RESULTS:** No patient died postoperatively. Forty-nine (80 per cent) were able to eat normally before the 28th day. A follow-up analysis showed survival rates of 83 per cent at three years and 79 per cent at five years. **CONCLUSION:** We propose subtotal laryngectomy with cricothyroidopexy for the surgical treatment of supraglottic carcinomas extending to the true vocal cord, the ventricle, and the posterior third of the false vocal cord. Author.

The role of comprehensive neck dissection with preservation of the spinal accessory nerve in the clinically positive neck. Andersen, P. E., Shah, J. P., Cambronero, E., Spiro, R. H. Head and Neck Service, Memorial Sloan-Kettering Cancer Center, New York, New York 10021. *American Journal of Surgery* (1994) November, Vol. 168 (5), pp. 499–502.

BACKGROUND: The most significant prognostic factor in patients with squamous cell carcinoma of the head and neck is the presence of cervical nodal metastases. Radical neck dissection is the standard by which all cervical lymphadenectomy procedures are judged. In the presence of clinically positive nodal metastasis, the benefit of preserving the spinal accessory nerve (SAN) has to be weighed against the possible risk of increased failure in the neck. We performed this retrospective study to determine if preservation of the SAN in patients with clinically evident nodal metastases was associated with increased risk of failure in the dissected neck. **PATIENTS AND METHODS:** Between January 1, 1984 and December 31, 1991, 378 comprehensive neck dissections were performed in 366

patients with clinically and pathologically positive nodal metastases from squamous carcinoma of the upper aerodigestive tract. We compared survival, neck control rates, and other factors in patients who had a classic radical neck dissection (RND) to those who had modified radical neck dissection sparing only the SAN (MRND I). **RESULTS:** Actuarial five-year survival and neck failure rates for the RND group were 63 per cent and 12 per cent, compared to 71 per cent and eight per cent for the MRND I group ($P = \text{NS}$). Survival and neck failure were not statistically different between the MRND I and RND groups when the analysis controlled for pathologic N stage, presence of extracapsular spread, and the presence of pathologically demonstrated metastatic nodes along the course of the SAN. Nor were there significantly different patterns of neck failure with RND versus MRND. **CONCLUSION:** Modification RND to preserve an uninvolved SAN in the clinically positive neck does not adversely affect survival or neck control. Author.

An audit of the early complications of turbinectomy. Oluwole, M., Mills, R. P. University Department of Otolaryngology, Ninewells Hospital, Dundee. *Annals of the Royal College of England* (1994) September, Vol. 76 (5), pp. 339–41.

An audit of the complications of turbinectomy operations carried out in our unit between 1987 and 1988 indicated an unacceptably high rate of significant haemorrhage. In view of this the surgical technique was changed in an attempt to avoid damage to the main arterial supply of the turbinate. The haemorrhage rate has fallen, but we have had one case of severe nasal crusting, a complication not seen in the earlier series. The morbidity associated with complications of turbinectomy is severe enough for the operation to be reserved for patients with severe rhinitis unresponsive to other treatments. Author.

Through-flow revascularization of the tongue using a radial forearm free flap. Evans, D. M., Chevretton, E. B., Cole, R. P., Pereira, J. A., Morrison, G. A. Department of Plastic Surgery, St Thomas' Hospital, London, UK. *British Journal of Plastic Surgery* (1994) September, Vol. 47 (6), pp. 419–21.

Surgery for invasive squamous cell carcinoma involving the tongue base usually necessitates a total glossectomy because complete tumour resection requires sacrifice of both lingual arteries leaving a non-viable anterior tongue. A case is presented in which both lingual arteries were sacrificed to achieve complete tumour excision and the remaining anterior two-thirds of the tongue were successfully revascularized by through-flow from a radial forearm free flap which was used for pharyngeal reconstruction. This technique offers hope of preservation of the tongue when radical surgery would otherwise lead to its removal. Author.

Ultrasound imaging in laryngeal cancer: a preliminary study. Loveday, E. J., Bleach, N. R., Van Hasselt, C. A., Metreweli, C. Department of Diagnostic Radiology, Prince of Wales Hospital, Chinese University of Hong Kong, Shatin. *Clinical Radiology* (1994) October, Vol. 49 (10), pp. 676–82.

High resolution ultrasound is a promising technique in the assessment of laryngeal carcinoma, yet few published studies have appeared concerning its use. We set out to assess if ultrasound could correctly identify the site and size of known lesions, if unsuspected extralaryngeal spread or nodal involvement could be shown and if the results could be used to influence patient management. Fourteen patients with advanced laryngeal cancer (Stage T₂ or above) were prospectively evaluated by systematic ultrasound technique, with the sonologist blind to the clinical findings. The results were correlated with clinical assessment and with histopathological findings in six patients who subsequently underwent surgery. Eleven of 14 tumours were visible on ultrasound and the site and size correctly identified in each. Unsuspected extralaryngeal spread was found in four cases increasing the tumour stage to T₄; spread to the pre-epiglottic space was also shown in four cases. Nodal staging was correctly raised in two cases and incorrectly in one. Patient management was significantly influenced in 8/14 cases. Ultrasound can identify the majority of laryngeal tumours of Stage T₂ and above, and detect extralaryngeal spread. Small tumours may not be visible but in this preliminary study, ultrasound complemented the clinical assessment and was useful in patient management. Author.

CT evaluation of displaced superior cornu of ossified thyroid cartilage. Avrahami, E., Harel, M., Engender, M. Department of Radiology, Edith Wolfson Medical Centre, Holon, Israel. *Clinical Radiology* (1994) October, Vol. 49 (10), pp. 683–5.

PURPOSE: To present and to demonstrate traumatic displacement of the superior cornu of the thyroid cartilage. **PATIENTS AND METHODS:** Four elderly patients following minor neck trauma were referred for computed tomography (CT). They complained of a feeling of a foreign body in the throat and painful swallowing. Unilateral bulging of the hypopharynx was observed in all of them on indirect laryngoscopy. The patients underwent axial CT with 3-D reconstructions. **RESULTS:** Axial CT demonstrated unilateral medial convexity of the ossified superior cornu of the thyroid cartilage. 3-D CT demonstrated medial convexity of the ossified complex (the lateral thyrohyoid ligament and superior cornu of the thyroid cartilage). **CONCLUSION:** The inflexible ossified laryngeal cartilages in elderly patients may not return to normal alignment following traumatic displacement. Author.

A molecular and cellular hypothesis for aminoglycoside-induced deafness. Cortopassi, G., Hutchin, T. Department of Molecular Pharmacology and Toxicology, School of Pharmacy, University of Southern California, Los Angeles 90033. *Hearing Research* (1994) July, Vol. 78 (1), pp. 27–30.

The ototoxic effects of aminoglycoside antibiotics are well known. However, a molecular and cellular mechanism for the death of cochlear hair cells has remained difficult to prove. Human genetic studies have shown that a rare trait for hypersensitivity to aminoglycosides is conferred by mitochondrial genetic variation. Recently, a gene involved has been identified as the mitochondrial small ribosomal RNA gene, consistent with the known mechanism of aminoglycoside action against bacteria. We used the existing data as a basis for our hypothesis of a molecular and cellular model for aminoglycoside ototoxicity that is described in this paper. Author.

Imaging of head and neck tumours with positron emission tomography and (11C) methionine. Leskinen-Kallio, S., Lindholm, P., Lapela, M., Joensuu, H., Nordman, E. Department of Oncology and Radiotherapy, Turku University Central Hospital, Finland. *International Journal of Radiation, Oncology, Biology and Physiology* (1994) December 1, Vol. 30 (5), pp. 1195–9.

PURPOSE: To evaluate the value of positron emission tomography and (11C) methionine imaging of malignant tumours of the head and neck region. **METHODS AND MATERIALS:** Forty-seven tumours of the head and neck were investigated with 11C-labelled methionine and positron emission tomography before treatment. Because of the resolution limits of the positron emission tomography scanner, all tumours selected for the study were larger than 1 cm in diameter. **RESULTS:** Forty-two (91 per cent) of the 46 malignant tumours were clearly visible in the positron emission tomography image (squamous cell carcinoma; $n = 26$; lymphoma, $n = 9$; adenocystic carcinoma, $n = 2$; lymphoepithelioma, $n = 1$; adenocarcinoma, $n = 1$; transitional cell carcinoma, $n = 1$; esthesioneuroblastoma, $n = 1$; plasmocytoma, $n = 1$), while three (seven per cent) squamous cell carcinomas were visible, but less easy to detect due to physiological accumulation of the tracer in the area under observation. Only one (two per cent) squamous cell carcinoma could not be delineated from the positron emission tomography image, and there was no uptake of (11C) methionine in a benign pleomorphic adenoma. No correlation was found between the uptake of (11C) methionine and the histological grade in the subset of squamous cell carcinoma ($n = 30$). High physiological uptake of (11C) methionine was observed in the salivary glands and the bone marrow. **CONCLUSIONS:** Malignant head and neck tumours can be effectively imaged with positron emission tomography using (11C) methionine as the tracer. Author.

Three-dimensional treatment planning for maxillary cancer using a CT simulator. Nagata, Y., Okajima, K., Murata, R., Mitsumori, M., Mizowaki, T., Tsutsui, K., Ono, K., Nishimura, Y., Hiraoka, M., Nishidai, T., et al. Department of Radiology, Kyoto University Hospital, Japan. *International Journal of Radiation, Oncology, Biology and Physiology* (1994) November 15, Vol. 30 (4), pp. 979–83.

PURPOSE: The results of three-dimensional treatment planning using a computed tomography simulator were evaluated in patients with maxillary cancer. **METHODS AND MATERIALS:** Treatment planning was done in 25 patients using an X-ray simulator and plain X-ray films (1979–1982, group 1) in 34 patients using an X-ray simulator and computed tomography films (1983–1987, group 2), in 24 patients using a computed tomography simulator (1988–1992, group 3). The number of patients with Stage IV disease increased in the order of group 1 to group 3. **RESULTS:** The average radiation

field was smallest in group 3 (66.5 cm²) followed by group 2 (67.4 cm²) and group 1 (72.9 cm²). A radiation dose of more than 30 Gy to the lens of the effected side was delivered to 13 per cent of group 3, 44 per cent of group 2, and 44 per cent of group 1. The dose to the lens on the uneffected side was zero in 56 per cent of group 1, 74 per cent of group 2, and 96 per cent of group 3. A long-term decrease in visual activity on the effected side occurred in 11 per cent of group 3, 32 per cent of group 2, and 44 per cent of group 1. However, a significant increase in survival was only noted between groups 1 and 2, because the three population of patients were different. **CONCLUSION:** The three-dimensional treatment planning results in a better treatment than two-dimensional treatment planning as measured by complication rates and field sizes. Author.

The multidimensional nature of pathologic vocal quality. Kreiman, J., Gerratt, B. R., Berke, G. S. Division of Head and Neck Surgery, UCLA School of Medicine 90024. *Journal of the Acoustical Society of America* (1994) September, Vol. 96 (3), pp. 1291–302.

Although the terms 'breathy' and 'rough' are frequently applied to pathological voices, widely accepted definitions are not available and the relationship between these qualities is not understood. To investigate these matters, expert listeners judged the dissimilarity of pathological voices with respect to breathiness and roughness. A second group of listeners rated the voices on unidimensional scales for the same qualities. Multidimensional scaling analyses suggested that breathiness and roughness are related, multidimensional constructs. Unidimensional ratings of both breathiness and roughness were necessary to describe patterns of similarity with respect to either quality. Listeners differed in the relative importance given to different aspects of voice quality, particularly when judging roughness. The presence of roughness in a voice did not appear to influence raters' judgments of breathiness; however, judgments of roughness were heavily influenced by the degree of breathiness, the particular nature of the influence varying from listener to listener. Differences in how listeners focus their attention on the different aspects of multidimensional perceptual qualities apparently are a significant source of interrater unreliability (noise) in voice quality ratings. Author.

A double-blind, controlled trial to assess the safety and efficacy of azelastine nasal spray in seasonal allergic rhinitis. Ratner, P. H., Findlay, S. R., Hampel, F. Jr., van Bavel, J., Widlitz, M. D., Freitag, J. J. Sylvana Research, San Antonio, TX 78229. *Journal of Allergy in Clinical Immunology* (1994) November, Vol. 94 (5), pp. 818–25.

BACKGROUND: Azelastine solution as a topically (nasal) administered antiallergy drug with a preclinical profile suggestive of efficacy in patients with allergic rhinitis. **OBJECTIVES:** The study was designed to compare the effectiveness and safety of two dosages of azelastine nasal spray (two sprays per nostril once daily and twice daily) with that of placebo in the treatment of patients with symptomatic seasonal allergic rhinitis. **METHODS:** Two hundred fifty-one patients (12 years of age or older) were randomized to treatment in this two-week, double-blind, parallel-group study. Primary efficacy variables were Major Symptom Complex (nose blows, sneezes, runny nose, itchy nose, watery eyes) and Total Symptoms Complex (Major Symptom Complex plus itchy eyes/ears/throat/palate, cough, postnasal drip). **RESULTS:** Patients treated with azelastine had mean per cent improvements in Total and Major Symptom Complex scores that were consistently superior to placebo at each evaluation point. Overall, improvements were statistically significant ($P < \text{or} = 0.05$) in the Total Symptoms Complex for both azelastine groups and in the Major Symptom Complex for the twice daily group with a trend toward statistical significance for the once daily group. Azelastine was superior to placebo in improving all individual rhinitis symptoms. Adverse experiences in the azelastine groups were minor and infrequent. **CONCLUSION:** The results support the efficacy and safety of azelastine nasal spray in the treatment of seasonal allergic rhinitis. Author.

Endochondral pseudocyst of the auricle. Lee, J. A., Panarese, A. University Department of Pathology, Medical School, Sheffield. *Journal of Clinical Pathology* (1994) October, Vol. 47 (10), pp. 961–3.

Endochondral pseudocyst of the auricle is an uncommon, though distinctive clinicopathological entity occurring mainly in young men. An additional case is reported and the differential diagnosis and pathogenesis discussed. It is suggested that lymphatic dilatation of normally present tissue planes could be the most likely causative

mechanism. Minor trauma to susceptible ears also seems to be a requirement for development of this condition. Author.

Acoustic rhinometry: rationale and perspectives. Kunkel, M., Hochban, W. Klinik für Mund-, Kiefer-, Gesichtschirurgie der Philipps-Universität Marburg, Germany. *Journal of Craniomaxillofacial Surgery* (1994) August, Vol. 22 (4), pp. 244–9.

Acoustic rhinometry provides a new, non-invasive access to upper airways geometry. In this experimental and clinical study the diagnostic value of acoustic rhinometry was investigated. In vitro measurements showed adequate accuracy, reliability and spatial resolution within the range of nasal and epipharyngeal dimensions. Clinical measurements confirmed reasonable reproducibility for the evaluation of nasal (NV) and epipharyngeal (EV) volume. Decongestion with xylometazoline resulted in a 36 per cent enlargement of nasal volume on average. The alteration of pharyngeal soft tissues due to maxillomandibular advancement of 10 mm correlated to an increase of the EV-index of 6 cm³. Acoustic rhinometry identifies location and amount of nasal obstruction and in addition allows differentiation between obstruction due to mucosal hypertrophy and that due to skeletochondral deformity. Changes in the epipharyngeal volume following maxillary and mandibular osteotomies can be estimated in comparison with the preoperative situation. Author.

Giant aneurysm of anterior ethmoidal artery presenting with intracranial hemorrhage. Case report. Ranjan, A., Joseph, T. Department of Neurological Sciences, Christian Medical College and Hospital, Vellore, India. *Journal of Neurosurgery* (1994) December, Vol. 81 (6), pp. 934–6.

This 45-year-old woman presented with a history suggestive of an intracranial hemorrhage. Clinical examination indicated mild right pyramidal signs and neck stiffness. Computerized tomography demonstrated contrast enhancement in the region of a left frontal intraparenchymal hematoma with an adjacent subdural hematoma. Angiography revealed the presence of a giant aneurysm on the left anterior ethmoidal artery. Surgical evacuation of the hematoma with excision of the aneurysm and coagulation of the feeding artery was achieved. Postoperative recovery was uneventful. Vascular lesions of the anterior ethmoidal artery and the rarity of a giant aneurysm at this site are discussed. Author.

Temporomandibular joint disc replacement made by tissue-engineered growth of cartilage. Puelacher, W. C., Wissler, J., Vacanti, C. A., Ferraro, N. F., Jaramillo, D., Vacanti, J. P. Laboratory for Transplantation and Tissue Engineering, University Clinic of Dental Medicine, Leopold Franzens University, Innsbruck, Austria. *Journal of Oral Maxillofacial Surgery* (1994) November, Vol. 52 (11), pp. 1172–7; discussion 117–8.

OBJECTIVE: To test the effectiveness of the new technique of tissue-engineered growth of cartilage, temporomandibular joint (TMJ) disc replacements were created by seeding dissociated chondrocytes on synthetic, three-dimensional, bioresorbable polymer constructs of a predetermined anatomic shape, incubating the cell-polymer constructs *in vitro*, and transplanting them into test animals. **MATERIALS AND METHODS:** Twelve highly porous and bioresorbable cell-transplantation devices in the shape of TMJ discs were created using biodegradable polylactid and polyglycolic acid fibres. Bovine articular cartilage was dissociated into chondrocytes and the cells were allowed to attach to the three-dimensional polymer scaffolds and multiply *in vitro*. After one week, the cell-polymer constructs were implanted subcutaneously into nude mice. The neo-cartilage was assessed by magnetic resonance imaging (MRI) techniques, gross inspection, histology, and biomechanical and biochemical analysis after 12 weeks. **RESULTS:** All implants seeded with chondrocytes showed gross evidence of histologically organized hyaline cartilage. The scaffolds maintained their specific shape. They not only showed appropriate intrinsic stability during neomorphogenesis of cartilage *in vitro* and *in vivo*, but also seemed to guide the growth of cartilage. The presence of sulfated glycosaminoglycans was shown by aldehyde fuchsin alcian blue staining of the specimens. Type II collagen, considered to be indicative of cartilage formation, was found in the specimens tested. MRI showed signal

characteristics similar to those of hyaline cartilage. Analysis of neo-cartilage force/displacement curves and aqueous phase compliance using a closed compression chamber suggested that the ability of the constructs to resist deformation was similar to that of native donor cartilage. **CONCLUSION:** The technology of tissue-engineered growth of cartilage on individually designed scaffolds may have many applications not only in reconstructive surgery of the TMJ, but also in craniomaxillofacial, plastic, and orthopedic surgery. Author.

Symptoms as a clue to otologic and psychiatric diagnosis in patients with dizziness. Clark, M. R., Sullivan, M. D., Fischl, M., Katon, W. J., Russo, J. E., Dobie, R. A., Voorhees, R. Department of Psychiatry and Behavioral Sciences, Johns Hopkins University, Baltimore MD 21287–5371. *Journal of Psychosomatic Research* (1994) July, Vol. 38 (5), pp. 461–70.

Dizziness is a common symptom that often remains unexplained despite extensive medical evaluation. Psychiatric disorders are usually considered only after all medical causes of dizziness have been ruled out. Sixty-five patients referred to an otolaryngology practice received a structured psychiatric interview, an otologic evaluation, and a dizziness questionnaire modified to assess psychiatric symptoms. They were divided into four diagnostic groups: psychiatric diagnosis only, otologic diagnosis only, both diagnoses, or neither diagnosis. Eleven questionnaire items were significantly associated with diagnostic groupings. Stepwise discriminant function analysis utilizing age, gender, rapid/irregular heartbeat, extremity weakness, nausea/vomiting, and difficulty with speech resulted in correct group classification for 70 per cent of subjects. The presence of dizziness symptoms like vertigo or lightheadedness was not significantly different between groups. This study suggests that assessment of psychiatric and autonomic symptoms should accompany, not follow, otologic evaluation of dizziness. These symptoms may be more important diagnostically than dizziness quality. Author.

Evidence in infants with cleft palate that breast milk protects against otitis media. Paradise, J. L., Elster, B. A., Tan, L. University of Pittsburgh Cleft Palate-Craniofacial Center, PA. *Pediatrics* (1994) December, Vol. 94 (6 Pt1): pp. 853–60.

OBJECTIVE: Most infants with cleft palate suckle unproductively and require feeding by artificial means. Most also have unremitting otitis media accompanied by (usually) nonpurulent middle-ear effusion, a complication generally attributed to impaired eustachian tube ventilatory function. We observed two infants with cleft palate in whom one or both ears appeared effusion-free on more than one occasion, and who also were receiving or previously had received breast milk feedings. This prompted us to analyze the relation between middle-ear status and feeding mode in a large series of infants with cleft palate. Our objective was to determine whether in these infants the receipt of breast milk mitigated the otherwise virtually invariable development and continued presence of otitis media. **METHODS:** We reviewed and analyzed data concerning both feeding mode and the presence or absence of middle-ear effusion in 315 infants with cleft palate, as recorded systematically in the course of prospective studies at our Cleft Palate-Craniofacial Center. Analysis was limited to periods preceding the infants' receipt of tympanostomy-tube placement or palate repair, or their second birthday, whichever occurred first. **RESULTS:** Freedom from effusion in one or both ears was found at one or more visits in only seven (2.7 per cent) of 261 infants fed cow's milk or soy formula exclusively, but in 17 (32 per cent) of 54 infants fed breast milk exclusively or in part for varying periods ($P < 0.0001$). In virtually all instances, the breast milk had been harvested by the mother and fed to the infant via an artificial feeder. Baseline clinical and sociodemographic characteristics and surveillance in the two groups of infants were comparable. **CONCLUSIONS:** Artificially fed breast milk provides variable protection against the development of otitis media in infants with cleft palate. This finding supports the likelihood of a similarly protective effect of breast milk in noncleft infants. The finding also suggests strongly that in infants with cleft palate, impaired eustachian tube function is not the only pathogenetic factor in the infants' initial development of middle-ear effusion. Author.