term "failure" in the table means that the patient died of cancer, usually about a year from treatment. The failures include two fatalities in the form of one anaesthetic death during excision of a primary lesion which had failed to respond, and one case of phlebitis with generalized sepsis following operation on glands.

Cancer of Lip, 1928-44. 242 Cases treated

	Implant for Lip (168 Cases)	Moulds for Lip (74 Cases)
A. Cases without glands or glandular develop- ment	Healed 85	32
	Healed: died later of other cause .. 26	13
	Residue or small re- currence excised: well 6	3
	Failure 3	7
	Total 120	55
B. Cases without glands or glandular develop- ment; excision, then radium for lip	Free from disease .. 117 (97%)	48 (87%)
	Free from disease (radium only) .. 111 (92%)	45 (81%)
	Healed 8	3
	Healed: died later of other cause .. 2	0
	Failure 0	1
	Total 10	4
C. Cases with glands when first seen	Healed 10	1
	Healed: died later of other cause .. 3	1
	Failure (due to glands) 12	7
	Total 25	9
	Healed 5	2
D. Cases which developed glands after successful treatment of lip	Healed: died later of other cause .. 1	2
	Failure (due to glands) 7	2
	Total 13	6
	Totals 168	74

It appears to be a feature of lip carcinoma that in the great majority of cases the result is known in about a year, and the frequency with which this was found made it reasonable to include patients up to the year 1944. The result for every case has been scrutinized to determine this point, and it is a remarkable fact that every failure in the whole 1928-44 series has been obvious in the first year with but 7 exceptions. In only one of these was there a truly late recurrence of disease: the patient was treated successfully in 1931 for the lip, which remained healed, but in 1935 he developed a glandular metastasis, and this proved fatal, no other primary lesion being found. Although the other 6 patients lived two to three years after treatment, within a year it was quite obvious in 4 of these that the patient would die of cancer of the lip or glands, while in another the cause of death was development of an independent antral carcinoma. Only in the one remaining case was the issue in any doubt till 18 months from the time of treatment. It is for those reasons that the survey has been taken up to so recent a date; and this fact must be emphasized, since such a procedure could not ordinarily be adopted while recording cases of cancer.

Owing to the age of many of the patients, a number died of some other complaint a period of years afterwards; of all those shown in this category only 24 died within the first five years, the remainder of deaths being at intervals up to thirteen years.

Conclusions

The facts adduced show that the use of radium is a satisfactory radiotherapeutic method for cancer of the lip, although adequate treatment of the cervical glands still presents a serious problem. It is suggested that surgery and implantation of radium are the most promising methods for the neck, but certain work on the radiotherapeutic approach to this problem is not advanced enough for more to be said at present.

The cases treated by implantation of the lip include the worse ones, since the mould method is not readily adaptable to very bulky lesions or those spreading beyond the lip, yet the tabular statement shows that implant results are superior to those obtained by the use of moulds. Moreover, implantations throw less work upon a radiotherapeutic department, and also

on the ward nursing staff, so that this is now regarded from all points of view as being the method of choice for radium.

The malign influence exerted upon results by invasion of cervical glands is strikingly illustrated, but it is shown that the percentage of cases developing this complication is a small one.

It is with pleasure that I acknowledge indebtedness to my colleagues on the visiting staff of the Western Infirmary for their friendly co-operation in giving me every facility, both in wards and in operating theatres, for the necessary radiotherapy; to our physicist, Dr. McFarlane, for working out the dose-rates in the standard implants and also any special ones; and particularly to my clinical assistant, Dr. W. Allan Crawford, for much painstaking work in extracting from our records the details upon which this paper has been based.

REFERENCE

Paterson, R., and Parker, H. M. (1934). *Brit. J. Radiol.*, n.s., 7, 592.

PYLORIC STENOSIS: SELECTIVE MEDICAL AND SURGICAL TREATMENT

FIFTY SUCCESSIVE CASES WITHOUT A DEATH OR FAILED MEDICAL TREATMENT

BY

N. M. JACOBY, M.D., M.R.C.P.

*Consultant Paediatrician, Kent County Council; Registrar to the
Children's Department, Guy's Hospital*

The surgical treatment of congenital hypertrophic pyloric stenosis is now a very safe procedure in skilled hands, and Levi (1941) and Paterson *et al.* (1941) have published large series of cases with a mortality rate below 5%. Although many who have given medical treatment with atropine methylnitrate a trial know that it will cure some cases, they have in the main abandoned the method. This is because they fear the high mortality rate in the "failed medical case," which subsequently has to have an operation. Some administer "eumydrin" for a few days, and if vomiting does not rapidly cease submit the infant to operation. Such a procedure nearly always fails, and in fact it would have been better if the child had been operated on at the beginning. The result of all this has been a swing of opinion back to the view that Rammstedt's operation is the method of treatment for all cases. It is certainly obvious that any alternative method must be able to offer an equal degree of safety.

Jacoby (1944) suggested certain criteria for selecting individual cases for medical or surgical treatment, and had at the time treated 26 cases, with a mortality rate of 8%. Since then considerably more experience of the method has been obtained, and it can now be reported that 50 successive cases have been treated without any fatalities, and, what is equally significant, not one of the 26 cases selected for medical treatment failed to respond readily or had to be subjected to operation. On these results it seems reasonable to suggest that medical treatment has a definite part to play; for not only does it avoid unnecessary operations, but in certain cases—e.g., where there is secondary infection or diarrhoea—it is probably safer than operation. Moreover, in certain suitable cases, admission to hospital can be avoided altogether.

Method of Medical Treatment

It must be stressed that the medical treatment advised in the original paper, and employed ever since, is different from that in general use. The main difference lies in the radical reduction of feed volume at the beginning of treatment; and this is vitally important, as without it early cessation of vomiting cannot be expected. I believe that, irrespective of what quantity of feed passes the pyloric sphincter before vomiting occurs, the actual vomiting itself is highly undesirable, because it both weakens the infant and fills the attendants with gloom. It appears that atropine methylnitrate takes three or more days to exert its full effect, and it is probable that during these waiting days the cessation of vomiting is due mainly to feed-volume reduction. At the same time it is obvious that this method of treatment is totally unsuited to a severely dehydrated infant, and in such circumstances should never be used.

To achieve a satisfactory result with medical treatment the following procedure is advised:

1. Exact diagnosis by unmistakable palpation of a "palpable pyloric tumour."
2. Careful selection of cases according to the criteria given.
3. Reduction of feed to 1 oz. (28 ml.) four-hourly in infants under 6½ lb. (3 kg.), and 1½ oz. (42 ml.) in infants over 6½ lb. Breast milk is preferable, but whatever feed is used it should be of full strength.
4. Atropine methylnitrate 0.6% in alcohol—4 drops from a "fountain-pen filler" into the back of the mouth, 15 minutes before four feeds on the first day and then before three feeds on the second or third day; when vomiting has completely stopped, 2 drops thrice daily for about 16 weeks.
5. No stomach-washing unless the vomit contains large amounts of mucus.
6. No parenteral fluids by any route. A case that is in real need of hydration should be operated upon as soon as possible.

Method of Surgical Treatment

The method of surgical treatment used in this series was that advised by Levi, except that the feeding-chart was modified so as to take nearly six days after operation before full-strength milk was reached.

Criteria for Selection of Cases

The criteria for selection of cases have not been altered since the original paper, though an extra contraindication to medical treatment (haematemesis) has been added. It may perhaps be convenient to recapitulate them here.

1. *Indications for Surgical Treatment* :
 - (a) Vomiting beginning in the second week or earlier.
 - (b) Severe dehydration.
2. *Contraindications to Surgical Treatment* :
 - (a) Infection.
 - (b) Diarrhoea.
3. *Indications for Medical Treatment* :
 - (a) Vomiting starting in the fourth week or later.
 - (b) Vomiting continuous for three weeks or more before the infant is first seen, provided it is not severely dehydrated.
4. *Contraindications to Medical Treatment* :
 - (a) Severe dehydration.
 - (b) Haematemesis.

Table giving an Analysis of Results

	Medical Cases	Surgical Cases
Total cases	26	24
Male	22	21
Female	4	3
Average age at onset of vomiting	4 weeks	2.7 weeks
Average age on admission	6.3 weeks	4.7 weeks
Average birth weight	7.3 lb. (3.3 kg.)	7.3 lb. (3.3 kg.)
Average weight on admission	8.1 lb. (3.67 kg.)	6.7 lb. (3.04 kg.)
Number breast-fed	12	13
Number artificially fed	14	11
Average no. of days in hospital	13.4	13

These results show very much what would be expected if the criteria were followed. One point, however, is particularly worthy of note, and that is that 50% of the patients were artificially fed. Inquiry as to the reason for discontinuing breast-feeding revealed that in almost every case it was in the belief that the vomiting was due to the breast milk disagreeing with the infant. It cannot be too strongly emphasized that such a condition does not exist, and that artificial feeding can only lead to a worsening of the condition.

Selected Case Reports and Comments

When selecting cases for medical or surgical treatment it is found that in the majority a decision is soon arrived at. There are, however, certain cases in which the various indications and contraindications balance each other, with the result that personal judgment has to be used. The following selection of cases attempts to show how some of these problems were dealt with.

Case 1.—Female, aged 6 weeks; artificially fed; birth weight, 7½ lb. (3.4 kg.). Vomiting started at 5 weeks. On admission the child was collapsed and seemed moribund. The weight had fallen to 6 lb. 5 oz. (2.87 kg.); the temperature was 102° F. (38.9° C.). She

was very dehydrated and was having quite severe haematemeses. It was obvious that no form of treatment other than resuscitation could be undertaken. At the end of 36 hours she was fully hydrated by parenteral means, the temperature had fallen to 98° F. (36.7° C.), and the condition was much improved. As she now appeared, the indications were for medical treatment, but in view of her previous dehydration and haematemeses it was decided that operation must be performed. Recovery was uneventful.

Case 2.—Aged 11 days; birth weight, 8 lb. (3.6 kg.); breast-fed. Vomiting started on the seventh day. Weight on admission, 7 lb. 12 oz. (3.5 kg.). The infant was having six loose green stools daily and had an upper respiratory infection and sepsis at the umbilicus.

Normally, cases that start vomiting so early should be operated on, but here it was felt that the diarrhoea and respiratory infection made this a dangerous procedure. Medical treatment was started, and vomiting had completely ceased by the third day. The patient was fit for discharge by the tenth day.

Case 3.—Aged 2 months; birth weight, 5 lb. 10 oz. (2.55 kg.); artificially fed. Vomiting started at 2 weeks. Weight on admission 5 lb. 9 oz. (2.52 kg.). Was severely dehydrated and having tetanic spasms. Because of the very long period of vomiting associated with dehydration it was felt that rapid relief was required, and an operation was performed forthwith. Seven days later the stools became loose and frequent. The child was given a blood transfusion and then dextrose-saline for 24 hours, and was put on to peptonized breast milk. The stools rapidly improved, and the feed was gradually changed to peptonized artificial feed, which was slowly depeptonized. This infant through its long period of semi-starvation had almost lost its tolerance for food, and after operation presented a feeding problem.

Summary

Fifty cases of congenital hypertrophic pyloric stenosis were dealt with by selective medical and surgical treatment. There were no deaths and no failures of medical treatment.

A method of medical treatment involving feed-volume reduction is described.

Criteria for the selection of cases for medical or surgical treatment are given.

REFERENCES

- Jacoby, N. M. (1944). *Lancet*, 2, 748.
 Levi, D. (1941). *British Medical Journal*, 1, 963.
 Paterson, D., Dobbs, R., and Barrington-Ward, Sir L. (1941). *Proc. roy. Soc. Med.*, 35, 49.

Medical Memoranda

Diphtheritic Encephalomyelitis

Nervous symptoms, complications, and sequelae of diphtheria occur often enough. They are clinically important though peculiar in type. Their pathology and pathogenesis are not yet perhaps completely understood. References in the literature to diphtheritic encephalomyelitis are very few. Querido (1928), who recorded a case of post-diphtheritic encephalitis, remarked that parenchymatous inflammation of the central nervous system is the rarest sequel of diphtheria. Hall (1932) reported a fatal case of acute toxic encephalitis in a female child aged 18 months. In addition to membrane in the pharynx, from which diphtheria bacilli were cultivated, the necropsy showed distension of cerebral vessels, with linear haemorrhages throughout the white matter.

Below is recorded a fatal case of encephalomyelitis which occurred as a complication of faucial diphtheria. The extreme rarity of the condition warrants this report.

CASE HISTORY

A Sikh male child aged 15 months was admitted into the children's ward with the complaint of unconsciousness with convulsions, duration three days. The onset was sudden. About a fortnight back the child had had vomiting for four days and fever for two days. There was no other history of significance. On examination the patient was comatose; temperature 97.4° F. (36.3° C.), pulse 110, and respirations 26 per minute. The pupils were moderately dilated and reacted to light. The neck was soft, and Kernig's and Brudzinski's signs were negative. There was left hemiplegia. Tendon-jerks were exaggerated and Babinski's sign was extensor on both sides. The tonsils were enlarged, with a small suspicious membrane on the left. Other systems were normal.

Investigations.—Fundi: Only slight bilateral venous congestion was present. Cerebrospinal fluid: 15 ml. of clear sterile fluid was drawn out under high tension by lumbar puncture; a few mono-