Case 3.—Aged 53; post-menopausal. April, 1945, right mastectomy followed by deep x-ray treatment for breast carcinoma. January, 1947, right supraclavicular metastases treated by deep x rays. October, 1947, radiograph showed prominence of both hilar shadows and reticulation in the lung fields, diagnosed as lymphangitis carcinomatosa. January, 1948, stilboestrol, 5 mg. q.i.d., prescribed and continued; deep x-ray treatment given to pelvic metastases. August, 1949, decrease in size of hilar shadows, and lung fields appear clearer, although right diaphragm now raised. January, 1950, patient died, 27 months after the original lung metastases.

Case 4.—Aged 52. October, 1945, right mastectomy for breast carcinoma. January, 1946, radiograph showed rounded shadow at right costophrenic angle; stilboestrol, 0.5 mg., prescribed and continued for 14 months. April, 1946, deep x-ray treatment to mass on right chest wall. March, 1947, deep x-ray treatment to left supraclavicular metastases. July, 1947, shadowing at right base unchanged. In addition there was a right interlobar and left basal effusion, and generalized increase in lung markings. September, 1947, patient died, 19 months after the original lung metastases.

Case 5.—Aged 75, post-menopausal. December, 1945, attended with carcinoma right breast. January, 1946, deep x-ray treatment to right breast and glandular areas. June, 1947, radiograph showed bilateral hilar gland enlargement; stilboestrol, 5 mg. q.i.d., prescribed and continued. February, 1951, radiograph showed clearing of hilar shadows; patient alive 44 months after original mediastinal metastases.

Case 6.—Aged 65; post-menopausal. March, 1948, right mastectomy for breast carcinoma. August, 1948, post-operative deep x-ray treatment to right chest wall and glandular areas. December, 1949, radiograph showed multiple rounded opacities in both lung fields. January, 1950, deep x-ray treatment to right supraclavicular metastases. December, 1950, stilboestrol, 0.5 mg. q.i.d., prescribed and continued. March, 1951, radiograph showed no change in lung shadows. May, 1951, patient alive 17 months after original lung metastases.

Case 7.—Aged 71; post-menopausal. July, 1947, right mastectomy for breast carcinoma. November, 1947, post-operative deep x-ray treatment to right chest wall and glandular areas. February, 1950, radiograph showed multiple rounded opacities in mid-zones of both lungs (Fig. 5); stilboestrol, 5 mg. q.i.d., prescribed and continued for seven months. February, 1951, radiograph showed partial resolution of lung opacities (Fig. 6). April, 1951, patient alive 14 months after original lung metastases.

Case 8.—Aged 59; post-menopausal. September, 1949, attended with carcinoma right breast and fixed axillary glands; radiograph showed rounded multiple opacities in both lung fields. November, 1949, deep x-ray treatment to right breast. February, 1950, stilboestrol, 0.5 mg. q.i.d., prescribed and continued. April, 1951, radiograph showed partial resolution of lung opacities. May, 1951, patient alive 20 months after original lung metastases.

Case 9.—Aged 66; post-menopausal. August, 1949, attended with carcinoma left breast and fixed axillary glands; stilboestrol, 5 mg. q.i.d., prescribed and continued. October, 1949, deep x-ray treatment to left breast and glandular areas. February, 1950, radiograph showed bilateral hilar gland enlargement with extension into lung-fields; diagnosed as lymphangitis carcinomatosa. June, 1950, shadowing on right side cleared after four months. October, 1950, testosterone, 800 mg. monthly, prescribed for ulceration of left breast which was not responding to stilboestrol. April, 1951, radiograph showed decrease in left lung infiltration; breast ulceration regressing on testosterone. May, 1951, patient alive 15 months after original lung infiltration.

Case 10.—Aged 47; cyclical. October, 1943, deep x-ray treatment to carcinoma right breast with multiple skin nodules. December, 1944, radiograph showed opacity in

right lower zone, ? nature; this increased slowly in size. July, 1946, stilboestrol, 5 mg. q.i.d., prescribed and continued for 13 months. December, 1947, radiograph showed no new opacities; stilboestrol stopped. June, 1948, radiograph showed multiple opacities in right mid zone, left basal effusion, and radial shadowing suggesting lymphogenous spread; stilboestrol restarted. November, 1948, patient died, 47 months after original lung shadowing.

Summary

A report is made on 61 cases of pleural or lung metastasis secondary to breast carcinoma treated by oestrogens. A series of 66 similar cases which were not treated is used for comparison.

In the treated group 31% of cases survived over 12 months, as compared with only 7.5% in the untreated group. In the treated group 26% of cases showed regression of pulmonary lesions, compared with 0% in the untreated group.

The possibility of a non-malignant aetiology in the cases with long survival is discussed.

The effect of oestrogens in these cases is essentially temporary, and no prophylactic effect against the development of pulmonary metastases can be shown.

REFERENCES

- Boag, J. W. (1948). *Brit. J. Radiol.*, 21, 128.
 Paterson, E. (1950). *Practitioner*, 165, 488.
 Stoll, B. A. (1950). *Proc. roy. Soc. Med.*, 43, 875.
 Walpole, A. L., and Paterson, E. (1949). *Lancet*, 2, 783.
 Wood, C. A. P., and Boag, J. W. (1950). *Researches in the Radiotherapy of Oral Cancer*, M.R.C. Report No. 267.

TEN YEARS' CLINICAL EXPERIENCE OF MODIFIED LEUCOTOMY OPERATIONS*

BY

WILLIAM SARGANT, M.B., F.R.C.P., D.P.M.

Physician-in-Charge, Department of Psychological Medicine,
St. Thomas's Hospital

It is over 10 years since some of us, evacuated to Sutton Emergency Hospital from the Maudsley Hospital during the last war, decided to approach Mr. Wylie McKissock, of St. George's Hospital, about attempting modifications of the standard leucotomy operation, then being used in America by Freeman and Watts, so as to investigate its possibilities in the treatment of selected neuroses. I had already seen some results of the early full standard leucotomy in Washington in 1938, and it was obvious then that this operation would come to be used in the neuroses, but cuts would have to be modified, if possible, to try to prevent some of the sequelae seen in these patients. A little later on Mr. G. Knight also offered to help in such work at the West End Hospital for Nervous Diseases.

Experimental Work

Our earliest experiments were not as satisfactory as one would have desired. We were able to do some at our own hospital, but in those days permission to perform such operations had to go through varied L.C.C. and E.M.S. administrative channels, and viewpoints could be so conflicting that varied makeshifts had often to be employed to enable them to take place at all, even on the most carefully selected and studied patients.

*Paper given at a meeting of the Royal Medico-Psychological Association on February 12, 1953.

These sometimes had to be transferred for operation unofficially to the neurosurgical units of voluntary hospitals, where more freedom of action existed, but this meant also that they then had to go straight home, often at the end of a fortnight, and be followed up as well as possible as out-patients. However unsuitable this was for research purposes, recent developments have made this earlier work well worth while, for it has enabled us to have interesting follow-ups of up to 10 years' duration in cases of neuroses with limited cuts, and as the atmosphere has become progressively more favourable to such work about 80 neurotic patients have now been operated on at Sutton (recently renamed Belmont Hospital) out of the many thousand admissions there, and often months have been spent before or after operation, if necessary, in studying the individual cases in hospital.

In the past four years it has also been possible to work with Mr. Harvey Jackson at St. Thomas's Hospital on the use of other modified forms of operation in the neuroses and to explore their value in yet another new field—the so-called “psychosomatic” disorders. One can hope that some of the results obtained (Sargant, 1951) will make this work at least as acceptable in the next 10 years as the use of modified procedures has become to-day in the ordinary neuroses.

I think English clinicians may truly claim to be among the early workers in this field. Dax (1949) and Radley Smith were beginning to experiment with modified cuts in cases of psychoses in 1942, as we were in cases of neuroses. By 1944 Slater and I were already able to stress, as a result of our early findings, that “for each patient the minimum of brain tissue must be destroyed that will produce the desired clinical effect,” and that “the operative skill of the surgeon is required to ensure that the operation is not so extensive and destructive” as to produce unnecessary and undesirable sequelae. It was also possible to outline some of the more obvious clinical indications and contraindications resulting from our earlier work (Sargant and Slater, 1944; Sargant and Stewart, 1947).

The “Post-leucotomy Syndrome”

However, at the end of the war it still seemed generally accepted in America that extensive cuts and post-operative confusion were necessary in order to obtain satisfactory results, and workers, such as Rylander (1948) in Sweden and others in this country (Ström-Olsen and Tow, 1949), were still subjecting cases of neuroses to full and often posterior “standard” operations. Such operations were taking a quite needless toll of a neurotic patient's remaining personality assets. Unfortunately, it is the published and understandably gruesome findings of some of these workers that still provide the major ammunition for the hostile criticisms of this operation in the medical and lay press alike. As a result, it is generally necessary to reassure neurotic patients and their relatives that such methods have been abandoned as a routine measure for many years now at centres specializing in neuroses in England.

An independent follow-up study of 30 patients operated on at Sutton eighteen months to eight years previously (Baker and Minski, 1951) showed, in fact, that no so-called “post-leucotomy syndrome” common to the group was recognizable as such, and the view was expressed that the findings of others in this respect were possibly due to persistence of previous personality defects or disease symptoms, or because the cut had been made too far posteriorly or in other anatomically undesirable areas. Rylander (1952) has also confirmed that, with undercutting of the lower quadrants only, no undesirable personality changes were found in a careful follow-up of his patients. Without hesitation or equivocation, one can now say that it is wrong

to subject the ordinary run of neurotic patients, and many psychotic patients for that matter, to a routine full standard operation till modified procedures have been tried first.

Modifications of Procedure

Since 1942 it has been possible to work with four British surgeons on various modified procedures and to see the work of many others in the U.S.A. All sorts of modifications have been attempted in selected patients, including full sweeps involving both the upper and lower quadrants of the frontal lobe done further forward, and section of the lower quadrants only, first used by McKissock in 1943.* Transorbital leucotomy was done on one of my patients while I was in the U.S.A. in 1948, and I saw the results in other cases. In the same year an open “rostral” type of leucotomy was also carried out by Mr. Guy Odom at my request at Duke University, and Mr. McKissock has been doing both open and closed rostral and medial quadrant operations at Belmont Hospital in recent years. In the past four years at St. Thomas's, special attention has again been paid to section of the lower quadrants by Mr. Harvey Jackson in the neuroses and psychosomatic states. Deteriorations resulting from full cuts have been seen for comparison from time to time and when the operative results from other workers have been examined, or complications have occurred, and also when a surgeon has obviously misplaced the cut in too posterior a manner—a greater or less risk that must still unfortunately be reckoned with in all decisions on whether or not to operate in a particular case by any particular method.

It is no longer as easy to believe those who have suggested that the thing that really matters is the quantitative amount of brain damage done in the prefrontal lobe rather than its actual site. My own clinical impressions increasingly support Fulton's (1952) work on animals, that the more you keep to the region of the inferior medial quadrant the safer you are. The further one ventures from this area the more likely is one to run into undesirable sequelae, though the farther forward the damage the better. Especially with broad foreheads, cutting the fibres in this area by a lateral approach may be difficult unless special techniques are employed, and many patients still showing tension after an apparently full cut may be, in fact, those in whom important fibres in this quadrant have unfortunately been missed. Many reoperations on this quadrant may have to be performed in the future when this fact is more generally realized.

Quantitative factors in the cut are also very important, but I believe it will be finally shown that to obtain the best clinical results with the minimum of undesirable sequelae in neuroses the site of the operation is more important still. This may be the reason why Freeman's new deep frontal cut, using the transorbital route (Freeman and Watts, 1950), is apparently achieving many successes in the U.S.A., since it produces its maximum damage in just this lower medial area of the frontal lobe. There are also far fewer psychotic patients than is generally supposed who need to pay the price of a full posterior cut for their release from a mental hospital, though the deliberate production of emotional blunting is necessary in some. Greenblatt and Solomon's (1952) findings in the U.S.A. with what is termed “bimedial leucotomy” should be carefully studied in this respect.

Clinical Selection of Patients

The use of these limited cuts has, of course, entirely transformed the clinical possibilities of leucotomy. One can now promise the properly selected patient that, barring accidents, he will certainly not come to great harm, though total relief of distressing symptoms may not be as dramatic

*One of these patients operated on then, at the age of 68, is still enjoying a hale, hearty, and happy old age at 78, without any recurrence of his chronic tension state and attacks of severe recurrent depression. He remains a regular attendant and a sidesman at his church, an equally regular attendant at his bowling club, and recently won two first prizes at three consecutive whist drives.

and certain. With increasing surgical skill and modified operations, these accidents are becoming relatively fewer, and, like death from the operation, because of their increasing rarity need not now weigh too prominently in the final decision. Provided the right clinical indications are present, operations can be performed, if necessary, in intractable psychosomatic states, in anxiety hysteria, and in anxiety and depressive states in obsessive personalities. Such patients will also often do much better than severe obsessives where a more extensive operation may be necessary, as in the chronic psychotic, to remove symptoms making life so intolerable. One finding has been consistently true in the past ten years: the more worried you become about subjecting a well-preserved neurotic patient to a modified leucotomy because the basic personality remains good, the better he will do. Your unhappy results will be in those on whom you have recommended an operation more lightly because their personality is not so well-preserved and there is so much the less to lose. Some hospitals get disappointing results because they choose patients from among their worst clinical material rather than their best, even after all other methods have failed to help the patient, and he or she remains totally incapacitated by illness.

When using restricted cuts in the neuroses there are certain principles that still have to be observed to avoid disaster, apart from those already mentioned. One must be constantly on the look-out for schizophrenic features hiding under the presenting picture of an obsessional neurosis. For in partially relieving the obsessional component by operation you may be simply facilitating the emergence of more incapacitating schizophrenic thought disorder. There is no need to be worried by the presence of secondary hysterical features in the total presenting picture, provided they are being released only by underlying anxiety or obsessive tension. The malignant hysteric without anxiety and obsessive features probably does as badly, however, as the chronic hebephrenic. But in long-term follow-ups some good results will occur in chronic phobic states in mixed hysterical and obsessive patients. It is wise to pay special attention to body build, for the results in those of good muscular physique will be generally more satisfactory than in the constitutional asthenic. One should be very cautious in all states of psychopathy, or where paranoid features are deeply rooted in the basic personality rather than being merely part of a recent illness. One need not be too worried by symptoms of ill-temper which are found to be due solely to underlying tension resulting from the illness itself and do not occur when the patient is relaxed. But it is wise to avoid those patients in whom a quick temper is part of their normal constitutional endowment and which occurs without much tension, and in a total setting so frequently seen in the explosive psychopathic patient. In selecting neurotic patients for operation, one must always try to estimate what personality assets will remain if tension and obsessive thinking are diminished. In some patients this may be beneficial and in others harmful to their future social adjustment. If they are already impulsive and lacking in foresight the operation may make them more so, but there are so many other patients totally unable to live at all in the present because of numerous anxious preoccupations with the past and future. These can be made more normal by modified operations.

Finally, in choosing patients for modified leucotomy operations one should have available all other methods, such as psychotherapy, drug abreaction, intravenous acetylcholine therapy, E.C.T., modified insulin, and skill in the use of routine sedation in the hope that operative measures may be avoided. Many of the results obtained at Sutton and at St. Thomas's have been good because all other methods were available for trial first and a long period of preliminary study as an in-patient could be undertaken when necessary.

Psychological Testing

A word should be said about psychological testing as opposed to clinical psychiatric examination in the selection

of patients for these modified procedures and in assessing results. One can only beg competent clinicians not to rely too much on such tests at the expense of their mature clinical judgment, otherwise clinical perspectives can become distorted. The criterion of success or failure is best measured by whether the patient and the relatives are pleased or displeased, and by the subsequent work record and social and ethical adjustments shown. We do the operation for social and personal reasons, and not because a theoretical I.Q. may rise or fall a point or two, or some selective psychological testing shows what may prove to be an unimportant change socially for the patient concerned. I for one have now abandoned routine psychological testing, till further progress is made, in favour of clinical assessment, except in certain circumstances. For instance, it is somewhat useful to check the I.Q. before operation, because those with higher I.Q.s will generally do better than those with the lower ones. A Rorschach test in skilled hands may also detect latent schizophrenic features missed in the most careful clinical examination, which may prove a contra-indication in the young obsessional patient. For follow-up purposes I prefer clinical and social assessment to reliance on tests, which so often fail when they are most needed in assessing emotional rather than intellectual alterations that may have occurred.

Problems of Relapse

With the increased use of modified operations one is faced with the important problem of relapse. Recently one has occurred with a reasonably full cut as late as nine years after operation and an intervening period of good health. Some are also occurring four to five years after operation, and others have happened in as early as a month. Relapses occur with all types of operation, but in the case of modified techniques further improvement may often be obtained by reoperation, still without resorting to too posterior a cut. We have had several successes with reoperation when satisfactory improvement has been followed by relapse. Many years may also have passed between operations, but reoperation still helps.

One obsessional patient had his first operation in 1943, confined to the lower quadrants; he was generally improved for three months and then relapsed. It was not until 1948 that he was persuaded to have a more extensive cut, and he has since maintained his improvement. Another patient also had his first operation in 1943, relapsed, and was quickly reoperated upon; he was then able to stay at work till a recent follow-up revealed that he had again relapsed in 1951; the possibilities of his further treatment are now being explored. A patient with chronic tension, with an anterior total sweep at operation in 1947, relapsed in 1951, and had a second operation in 1952, again with benefit, but this time the second operation was confined to the medial quadrants only. I am noticing less tendency to relapse in lower-quadrant cuts done by Mr. Harvey Jackson recently, compared with those attempted in earlier years, possibly because we are now paying more attention to the inner quadrant than formerly. This finding would bear out recent observations by those doing open operations in this area in France, England, and the U.S.A., but we need a longer time to be certain on such points.

Social and Religious Considerations

On these matters, too, one can be most definite after ten years. If anterior and limited cuts are used conventional religious and ethical values are rarely irrevocably lost. Fanaticism on any topic may no longer be as easy to maintain, but more balanced points of view on religious and social issues are again made possible to the patient. Several of my patients have certainly had their religious faith heightened with the healing of their minds and a better ability to think of things beyond their own immediate and intense personal suffering. One patient has had two episodes of religious reawakening after each operation, which has also helped him on each occasion to attain better social adjust-

ments. A compulsive thief, of otherwise obsessional temperament, now works contentedly surrounded by lady clerks' handbags in an office—an impossibly provocative social situation for him before the operation. Two female patients with restless sexual propensities based on feelings of insecurity and tension have settled down to happier marriages than expected, one after rostral leucotomy and the second after a more posterior reoperation. One should, however, be very cautious in the presence of sex perversion or fetishism. Such patients provide striking contrasts to some seen in whom posterior cuts have resulted in loss of all feeling for others and a selfish egotism which may destroy the happiness of a whole family or group. The previous personality must be taken into consideration in final judgments on such issues, as socially undesirable traits not recognized before operation can be enhanced in certain instances even by limited cuts.

Therapeutic Persistence

I would also like to stress the need for therapeutic persistence and the use of all methods before too deteriorating procedures are finally decided upon or the too ready throwing in of one's hand when confronted with difficulties after modified leucotomy. One patient with a very severe obsessional neurosis had had 15 years of psychoanalysis and supportive therapy on and off before faith was finally lost by both patient and therapist alike in this approach, and modified leucotomy agreed to. This resulted in some relief of tension but a release of severe paranoid and depressive symptoms. These complications then had to be dealt with by the giving of insulin and E.C.T. A second operation, still confined to the lower quadrants but farther back, relieved further tension, but obsessional thoughts persisted. She is now being treated as an out-patient with intravenous acetylcholine injections and occupational therapy, where some might have decided that after the failure of so much psychotherapy, the first leucotomy, and the complications that ensued there was nothing more to be done; especially as a full operation was thought to be contraindicated in this particular patient because of certain personality traits. If one's operative efforts are not irretrievable it always leaves hope that other measures, short of deteriorating cuts, may be effective which would have failed before. Thus some phobic states may be further helped by intravenous acetylcholine injections after the edge has been taken off the patient's anxiety by modified leucotomy; and treatment with E.C.T. and insulin may become effective in depressives and schizophrenics where it has failed before. We have seen several examples of this. In addition, a reasonably intact personality is still preserved. Time for further psychotherapy can also be gained.

Conclusion

I must finally pay my very grateful tribute on behalf of all psychiatrists here to the many neurosurgeons in England for all the patience and co-operation they have shown us in our often stumbling and hesitant efforts for the relief of mental suffering by a method which is as yet obtaining only a hazardous social and medical respectability. I am certain, however, that a large number of psychiatric patients would echo these thanks. They and their families should be the real judges of our success or failure, and not our own theoretical prejudices and emotionally toned judgments. Psychiatry often creates insoluble difficulties for itself when we leave the patient's bedside and become too involved in speculative philosophical issues. If we are only content to remain doctors, constantly searching for new and better practical ways of trying to help our individual patients, the future of leucotomy is assured—at least until better ways are discovered for the practical relief of so much persistent individual human misery and social incapacity.

REFERENCES

- Baker, A. A., and Minski, L. (1951). *British Medical Journal*, 2, 1239.
 Dax, E. C. (1949). *Lancet*, 1, 162.
 Freeman, W., and Watts, J. W. (1950). *Psychosurgery*, 2nd ed. Thomas, U.S.A.
 Fulton, J. F. (1952). *Sherrington Lectures. II: The Frontal Lobes and Human Behaviour*. University Press, Liverpool.
 Greenblatt, M., and Solomon, H. C. (1952). *Amer. J. Psychiat.*, 109, 262.
 Rylander, G. (1948). *Proc. Ass. Res. nerv. Dis.*, 27, 691.
 — (1952). *Reports of First World Congress of Psychiatry*, Section 4, p. 356. Herman, Paris.
 Sargant, W. (1951). *Lancet*, 2, 87.
 — and Slater, E. (1944). *Physical Methods of Treatment in Psychiatry*. Livingstone, Edinburgh.
 — and Stewart, C. M. (1947). *British Medical Journal*, 2, 866.
 Ström-Olsen, R., and Tow, P. M. (1949). *Lancet*, 1, 87.

ANAL FISSURE

BY

E. S. R. HUGHES, M.D., M.S., F.R.C.S.

Assistant Surgeon, Royal Melbourne Hospital, Australia

An anal fissure is a triangular ulcer at the anal verge, extending into the anal canal. The lesion is often associated with severe pain, and when untreated tends to run a course of exacerbations and remissions.

Aetiology and Pathology

The fissure begins as a tear at the anal verge. This tear might be caused by the passage of unusually large or hard faeces (sometimes enema tubing) or may be related to temporary incoordination of the external sphincter, with slow relaxation of the subcutaneous part. The elliptical shape of the superficial portion of the external sphincter leaves vulnerable the midline posteriorly, and hence the fissure is nearly always in this position. The anterior fissure is seen almost exclusively in the female, and is due to the unprotected anterior segment.

A fissure is about 2 cm. long and 1.5 cm. wide, and the apex extends just above the anal intermuscular septum, to overlie the lower border of the internal sphincter. At first the fissure is uncomplicated. The floor contains longitudinal fibres of the corrugator ani muscle. Their presence indicates the shallow depth of the ulcer and a likelihood of healing without surgical intervention. If a skin tag ("sentinel pile") be present, it is small. There is no induration of the base, but the fissure is extremely tender and associated with much sphincter spasm.

This spasm prevents the ulcer from healing. It deepens, and the floor is then formed by circular fibres of the subcutaneous portion of the external sphincter. The skin tag is often large and oedematous; at the proximal end of the fissure the mucous membrane becomes polypoidal. This secondary mucosal polyp is found in a high percentage of chronic anal fissures. The edges of the ulcer are well defined and overlap the floor of the ulcer, so that the true size is concealed. Infection is an important complication of the fissure. The inflammation is localized and may end in suppuration, with abscess formation; this usually discharges into the anal canal to form a blind internal fistula. Much less often the abscess discharges on to the perianal skin, with the formation of a low anal fistula.

Clinical Features

Males and females are affected with equal frequency. The pain is described as burning, shooting, or aching in nature, and is related to defaecation; sometimes the act is extremely painful, but more often the pain begins half an hour after and drags on for another hour or two.