strength of 2 per cent. may be quite sufficient to give the necessary relief.

When this 5 per cent. solution is dropped into the conjunctival sac it does not modify in any way the sensitiveness to touch of the cornea or conjunctiva. The gentlest contact with cornea or conjunctiva is felt just as distinctly after the instillation of the dionine as before it, hence it is not an anaesthetic like cocaine or holocaine. It is of no use, therefore, for the removal of foreign bodies or for performing operations of any kind on the eye. But if the patient is suffering from a painful affection of the eye, such as iritis, irido-cyclitis, glaucoma, ulcer, or inflammation of the cornea, the instillation of the dionine solution will always soothe, and often give complete relief, for several hours from the severe pain which accompanies those affections of the eye. Dionine is not an ocular anaesthetic, but is a powerful ocular analgesic.

Does the dionine give this relief by its local action on the globe of the eye, or does it act on the central nervous system, after being absorbed into the general blood stream partly by the conjunctiva and partly by the tear passages? That its action is purely local is proved by the fact that when both eyes are painful relief is experienced only by the one into which the dionine has been instilled, the other eye remaining painful as before.

Cocaine and holocaine are both anaesthetics and analgesics. Cocaine and holocaine render cornea and conjunctiva insensitve, so that we can perform operations on the eye without pain, and for this purpose they stand so far unrivalled. They are also analgesics, relieving the pain of disease when it is superficial, as in abrasion and ulcers of the cornea. But in this analgesic power dionine is undoubtedly superior both to cocaine and holocaine, and hence the great value of this new agent in the treatment of diseases of the eye. In the deep-seated pain produced by iritis, irido-cyclitis, and glaucoma the analgesic effect of cocaine and holocaine is much less powerful, and particularly that of cocaine. Sometimes cocaine actually increases the pain by elevating the tension of the eye, and hence cocaine should be used with the greatest caution as an analgesic in inflammatory conditions of the eye. I have recorded a case¹ where an attack of acute glaucoma was brought on by the use of cocaine. In glaucoma cocaine should never be used for the relief of pain. Holocaine can be freely used in glaucomatous cases, as it has no effect whatever on the tension of the eye. It is in these cases of deep-seated pain due to inflammatory affections of the eye that the analgesic effects of dionine are of the greatest service. We can give the patient relief no doubt by the internal administration of morphine by the mouth or hypodermic injection, but this method has the great disadvantage of frequently deranging the digestion and disordering the patient's nervous system. It is a great step in advance to give the patient relief by a local analgesic alone, and this we are able to accomplish in most cases by dionine.

I have recently, in cases of deep-seated pain due to inflammatory affections of the eye, such as iritis, cyclitis, irido-cyclitis, and glaucoma, carried out comparative experiments with regard to the power of cocaine, holocaine, and dionine in relieving pain. I have used three solutions—cocaine, 5 per cent.; holocaine, 1 per cent.; and dionine, 5 per cent. I have used these solutions alternately in the same cases with the view to determine the degree and also the duration of the relief afforded. Cocaine is by a long way at the bottom of the list both as to the degree and duration of the relief afforded. Its analgesic effects are not to be compared with those produced by holocaine and dionine in this particular class of cases. Cocaine only gave very partial relief as compared with the great relief afforded by holocaine and dionine. The analgesic effects of the dionine were found to be even greater than those of holocaine.

With regard to the duration of the relief afforded, both holocaine and dionine were much superior to cocaine; but here, too, dionine was at the top of the list. The partial relief from cocaine rarely lasted more than an hour, whilst the analgesic effects of holocaine and dionine lasted for three and sometimes for four hours. For the relief of the severe deep-seated pain in inflammatory affections of the eye, both as regards degree and duration of the analgesia produced, I found dionine the most powerful agent, next to it holocaine, and a long way inferior to both cocaine.

There is an occasional effect of the dionine regarding which the patient must be warned, otherwise it may cause him much needless alarm. After the first instillation, there sometimes appears an intense chemosis of the conjunctiva, which

swells up and overlaps the cornea. This need cause no alarm as it rapidly subsides, and it is even an appearance to be welcomed, as in these cases where the dionine produces intense chemosis its analgesic effects seem to be greatest. This chemosis of the conjunctiva appears only after the first or second instillation of the dionine, and never after the subsequent ones, and need not interfere in the slightest degree with the regular use of the drug. I have never seen it after the use of 2 per cent. solutions, but only after the use of 5 per cent. solutions. The dionine drops or ointment may be used every four, six, or eight hours, according to the severity of the pain and the effect produced.

REFERENCES.

- ¹ BRITISH MEDICAL JOURNAL, 1898. ² Darier, *Leçons de Thérapeutique Oculaire*. ³ *Ophthalmic Review*, 1900.

HYDRONEPHROSIS DUE TO ABNORMALITIES IN
THE URETERS

TWO CASES SUCCESSFULLY TREATED BY PLASTIC OPERATIONS.

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WITHIN the last twelve months I have operated upon 2 cases of hydronephrosis and have found, in each, a deformity of the ureter to be the cause.

CASE 1.—*Stricture of Ureter: Ureteroplasty: Recurrence of Hydronephrosis: Ureteropyeloneostomy: Recovery.*

A. D., female, aged 19, admitted to the Leeds General Infirmary on October 6th, 1902, complaining of a swelling on the right side of the abdomen. The history was, that ever since the age of 2, the patient had suffered from pain and constant uneasiness in the right loin, especially after exertion. There had never been any symptoms of urinary disorder, neither pain nor frequency of micturition; and no blood had ever been observed in the urine. The pain during the last year or more had been worse and had come in "spasms" which caused faintness and sickness. Four weeks before admission she noticed that the right side of the abdomen was swelling. Since the first appearance of this enlargement it had steadily increased in size, without remission.

On examination of the abdomen a smooth, rounded bulging tumour was found in the right lumbar region. The signs revealed, permitted an assured diagnosis of hydronephrosis to be made.

On October 6th, 1902, the kidney was exposed through an oblique lumbar incision. The tumour was found to be formed by the enormously distended pelvis of the kidney. About 27 oz. of fluid were drawn off by the aspirator. It was then apparent that the relation of the ureter to the renal pelvis was abnormal. The ureter, of normal size, opened at approximately the junction of the upper third with the lower two-thirds of the pelvis, and was intimately adherent to the wall of the pelvis as it lay in contact with it. The ureter was freed from the pelvis, and at its point of origin was seen to be very markedly stenosed. The size of the ureter was abruptly diminished over a short length, as though a narrow tape had been tightly tied around it. A small incision was made into the ureter above $\frac{1}{2}$ in. below the stricture and a fine probe passed upwards to the pelvis. At the stricture its passage was arrested, nor could any probe be made to pass. The stricture was, therefore, carefully divided from the outside with a fine scalpel and the incision continued upwards into the pelvis until its length was approximately 2 in. This longitudinal wound was then stitched transversely with a continuous double suture of fine Pagenstecher thread passed with an intestinal needle; the mucous membrane was not pierced. Before introducing any of the stitches a probe was passed downwards along the ureter into the bladder to make certain that the channel was pervious. The kidney, which, after the emptying of the pelvis seemed unduly mobile, was anchored by a few stitches through the capsule passed in such a way as to tilt the kidney slightly, in the hope that the ureteral opening might thereby be made the lowest point.

Recovery from the operation was uneventful, but three weeks later it was seen that the tumour was reforming. On November 22nd an examination showed that the hydronephrosis was, to the full, as large as before. On November 24th the kidney was therefore again exposed through the old incision and the distended pelvis emptied. The ureter was cut completely across at its junction with the pelvis. The section was made obliquely. The pelvic opening was closed by a purse string suture and a continuous suture outside this. The distal end of the ureter was split for rather over an inch. An opening was now made into the pelvis at the lowest point, and to this opening the cut end of the ureter was sutured. The sutures of Pagenstecher thread were passed with an intestinal needle, and did not pierce the mucous membrane. The wound in the loin healed by the first intention, and the patient rapidly improved in health and strength.

When seen in August 1st, 1903, she had gained 2 st. 4 lb. in weight. The urine separator of Luys was passed. Both test tubes began at once to fill. On examination it was found that the urine from the right kidney was slightly larger in quantity and of lower specific gravity (1006 as compared with 1011) than that from the left. Palpation of the lumbar

region elicited no tenderness, and no enlargement of the kidney could be perceived. The wound was soundly healed, and the patient expressed herself as feeling well in all respects.

Fig. 1.—Diagram showing the distended pelvis and adherent ureter. *b* shows the stricture at the orifice of the ureter and the incision for ureteroplasty. *a* shows the position of the ureter after the second operation.

Fig. 2.—Diagram showing the spur-like projection at the entrance to the ureter.

CASE II.—Valve-formation at the Upper End of the Ureter; Pyelo-ureteroplasty; Solitary Kidney: Recovery.

M. B., female, aged 21. In September, 1902, the patient was confined. Shortly after her rising from bed she began to experience pain and a feeling of weight, "as though something were dragging" in the left side. Before this there had never been any symptom referable to the urinary organs. When the side was examined by her medical man a swelling was found. This increased gradually in size at first, until a tumour, obvious at once on inspection, had formed. During the last three months some variation in the size of the swelling had been noticed. The urine passed had varied a little in quantity, but had not been accurately measured. A diagnosis of hydronephrosis was made, and on April 20th, 1903, the kidney was explored through the loin. A large distension of the pelvis of the kidney was found. The pelvis was aspirated, and 32 oz. of thin clear urine withdrawn. On the inner side the ureter, which was of normal size, was adherent very firmly for about an inch to the wall of the pelvis. On separating it the upper end was found to be much thickened, and it was at first thought that a small stone might be impacted near the pelvis. The ureter was incised longitudinally, and the incision carried upwards into the pelvis. The thickening was found to be due to a prominent indurated spur which had formed at the junction of the pelvis and the ureter. The ureter opened obliquely into the pelvis, and that wall which was nearest to and adherent to the pelvis had formed, with the pelvic wall, a tough triangular valve, which seemed to be obstructing the entrance to the ureter. The incision in the ureter and pelvis divided this valve completely; it was continued upwards and downwards until its length was approximately 2 in. The vertical incision was then closed transversely. A small drainage tube was passed into the sac of the hydronephrosis through the cortex of the kidney, in order to drain away for a few days all the urine and so allow a better chance of healing in the ureteral wound. The wound in the loin was then closed, except at the point where the pelvic drainage tube issued.

For nine days all the urine was passed through the loin, no drop of urine issuing from the bladder. At the end of that time the tube was withdrawn and the wound gradually healed, and concomitantly urine began to be passed from the urethra.

The patient was seen on July 25th, 1903. The lumbar wound was entirely healed, the kidney could only just be felt. Urine was passed in normal quantity, and without any discomfort. The urine separator of Luys was passed. At the time of using this instrument I was not aware of the fact that no urine had been passed from the bladder for nine days subsequent to the operation, as two days after the operation I had left home for a few weeks. I found on passing the separator that all the urine escaped into the left test tube; not a drop came into the right. I was therefore very much chagrined at my apparent lack of skill with the instrument, but ample compensation was afforded me when I learnt the previous history, for it became then quite obvious that the patient possessed only one kidney, that upon which I had operated. The result, therefore, was a proof of the efficiency of the instrument as satisfactory as it was unexpected.

These two cases illustrate very well the treatment of hydronephrosis due to stenosis and valve obstruction of the ureter. In the first pyelo-ureteroplasty was followed by pyelo-ureteroneostomy; in the second the plastic operation alone sufficed to effect a cure. The number of cases of hydronephrosis which have been treated by procedures similar to these is still very small. In Mr. Henry Morris's book on *The Surgical Diseases of the Kidney and Ureter*, vol. ii, pp. 444, 445, only 12 cases are tabulated, and of these 5 were in the practice of the author. In Israel's work, *Chirurgische Klinik der Nierenkrankheiten*, page 72, 2 cases, one of valve formation and one of stenosis of the ureter, are recorded.

In Case I the stenosis of the ureter at its origin from the renal pelvis was doubtless congenital. Symptoms had been present since the age of 2. The high opening of the ureter was probably caused by the earlier and more considerable distension of the lower part of the pelvis. As the urine accumulated in the most dependent part of the pelvis, it would cause a bulging and an increasing distension of this part, so that as time passed the ureter would appear to be pushed higher and higher up in the inner wall of the sac. Although the opening at the first operation was made of large size, it was clearly inadequate as a means of drainage, on account of the fact that the lowermost part of the pelvis was never completely emptied. At the second operation the incision into the renal pelvis was made of good size and at the very lowest point.

In the second case the cause of valve formation was obscure. No better case than this could be quoted in strenuous advocacy of conservative treatment in the treatment of hydronephrosis, for the kidney affected was the only one the patient possessed, and if harm had come to that death would have been inevitable.

In both cases a thorough exploration of the whole length of the ureter was made, and no other abnormal condition was discovered.

DECAPSULATION OF THE KIDNEY FOR THE TREATMENT OF ALBUMINURIA.

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I HAVE read with much interest an article on Experimental Nephritis followed by Decapsulation of the Kidney by Drs. I. Walker Hall and G. Herzheimer, in the *BRITISH MEDICAL JOURNAL* of April 9th. While they deal with the subject almost entirely from the experimental and pathological standpoint, at the end of their valuable article they make a short reference to the surgical aspect of the subject. The conclusions they have come to by experimental methods are the same as those I have drawn from clinical experience over a period of many years. I have seen no reason to depart from my original opinion that the benefits derived from surgical operative interference in cases of albuminuria were due to relief of tension. When the capsule of an inflamed or congested living kidney is incised, the capsule retracts and the cortical substance pouts out through the wound, thus demonstrating that the parenchyma has been subjected to considerable pressure. Not only is this observed during life, but even in the dead kidney to a lesser degree the same physical conditions maintain. It is the contrary in old-standing parenchymatous and interstitial nephritis; in both these conditions there is no protrusion of the kidney substance when the capsule is divided. Edebohl and his followers maintain that decapsulation of the kidney is necessary, not only in acute but also in chronic renal affections, and that relief is obtained