ON
THE TREATMENT
OF
NÆVI MATERNI
BY LIGATURE.

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Read May 8, 1827.

WHEN Nævi Materni* are of considerable mag-

* The nature of the affections, to which the following observations refer, is not yet clearly ascertained, and some confusion exists in respect to their nomenclature. The conspicuous congenital malformations, in which the colour, texture, or thickness, the visible blood-vessels, or the hairy growth of the skin, deviate from their natural state, are called *nævi materni*, to which name the expressions, *congenitæ notæ*, *mother spots*, and *muttermahle* or *mutterflecken*, in German, are synonymous. These marks frequently remain unaltered through life, and require no surgical treatment. In other cases, when the skin has exhibited at the time of birth, or soon after it, a red, purple, or livid stain, a peculiar vascular growth is subsequently developed, either in the cutaneous texture or under it, and generally increases rapidly: perhaps indeed the vascular growth, as well as the cutaneous stain, which seems to be its germ, may sometimes be congenital. The term *nævus mater-*

nitude, or dangerously situated, none of the ordinary modes of treatment can be considered as at

nus, as used by English writers, includes not only the visible malformations of the skin, but also the vascular tumours which are afterwards developed under them, and which indeed are so far independent of the former, that they may occur where the texture of the skin is quite natural; while foreign authors, and particularly the French, give the name of *nævus* only to the marks of the skin. Baron Boyer speaks of these under the terms *nævi*, genitivæ *notæ*, *envies*, *taches de naissance*; “*Traité des Mal. Chir.* tom. II. p. 338;” and gives to the vascular growths the name of *tumeurs variqueuses*, or *fongueuses sanguines*, distinguishing them, according to the æra of their development, into *congénitales* and *accidentelles*, “*Ibid.* Chap. I. Art. 8.” Baron Dupuytren, struck by the analogy, which their structure and phænomena offer to those of the erectile tissues, has called them *tumeurs erectiles*; “*Dict. des Sciences Medicales*, tom. XX. p. 201.” The latter term is adopted by Mr. Breschet, who in the article *nævus* of the *Dict. de Médecine*, does not enter into the consideration of those growths. They are called by Graefe *Telangiectasies*; “*Angiektasie*, Leipsic, 1808, 4to.” and by Alibert, *Hæmatoncus*, from αἷμα, blood, and ὄγκος, tumour; “*Nosologie Naturelle*, tom. I. p. 334.” They have sometimes been called by the Germans, *Blutschwamm*, literally blood-sponge; Chelius, “*Handbuch der Chirurgie*, Leip. 1826; v. I. § 1282.” and they are obviously included by Mr. John Bell in the description of what he calls *aneurysm by anastomosis*, though I must observe that the vascular tumours, which I have seen, either existing at the time of birth, or developed under congenital stains of the skin, have not pulsated.

The French and Germans have again confounded these growths with the disease recently described by the English, under the name of *Fungus Hæmatodes*. See the excellent article “*Hématode*”, in the *Dict. des Sciences Médicales*, where Dr. Breschet has pointed out the mistake, and shewn the sense in which the somewhat inappropriate term of *fungus hæmatodes* has been used by the English writers. See also the *Handbuch* of Chelius, at the place

once safe and effectual. Although excision, which has been principally relied on, deserves the latter character, it is in many cases dangerous. The profuse bleeding attendant on the removal by the knife of even small *nævi*, is often alarming, and certainly dangerous in the young patients who are the most frequent subjects of the operation. When the morbid growth itself is cut, a powerful gush of arterial blood takes place, which can hardly be restrained, and is not explicable by any thing hitherto ascertained respecting the nature of these structures.

Even when we keep clear of the tumour, we generally have very serious hemorrhage, so that in operating in some instances of *nævi* not very large, I have really been alarmed for the life of the patient, and the recovery of strength and colour has been very tedious. A case related by Mr. Wardrop, in a paper printed in the ninth volume of the

before quoted. Mr. Maunoir has noticed the misapprehension and confusion which have existed on this subject, in his "*Mémoire sur les Fongus Médullaire and Hématode*, Geneva, 1820 ;" and he proposes to give the latter name to the vascular tumours, and to designate the affection, which has been called fungus hæmatodes in England, by the name fungus medullaris. We need not be surprised that the appellation fungus hæmatodes has given rise to misapprehension ; for under it are included affections, in which the formation of fungus, and the admixture of blood with the morbid growth, are not essential circumstances. This name would be altogether inappropriate to the vascular growths of congenital or subsequent origin, because they do not form fungus, either in their natural course, or even when wounded or irritated by escharotics.

Society's Transactions, shews that these fears are not imaginary. A child was born with a nævus on the back of the neck, resembling, in form and size, half an ordinary orange. When it was seen on the tenth day after birth, the skin had already given way, and copious hemorrhage had ensued. "Conceiving," says Mr. Wardrop, "the immediate extirpation of this tumour the only chance of saving the infant, I removed it as expeditiously as possible, and made the incision of the integuments beyond the boundary of the tumour; aware of the danger of hemorrhage where such tumours are cut into. So profuse however was the bleeding, that though the whole mass was easily removed by a few incisions, the child expired."* The event of this case will not surprise us when we find that blood issued most abundantly from the whole denuded surface, and that one vessel, of which the divided orifice was observed in the basis of the tumour, admitted a full-sized urethra bougie.

Having observed instances in which ulceration and sloughing had occurred spontaneously in these growths, destroying them in great part, and producing inflammation, by which what remained was consolidated and prevented from increasing, Mr. Wardrop was led to imitate this process by the application of kali purum to the part; and he has found the method successful in many instances of

* Ante, Vol. IX. p. 203.

small nævi*. It would probably be as dangerous as excision, though in a different way, in those of larger size†.

I have only used the caustic on one occasion, when it was partially successful, arresting the progress of the morbid growth, but not removing the unnatural prominence and discolouration. It was a case of nævus on the lower part of the leg in a child about two years old, seated in the skin, and closely resembling in its deep tint, the colour of the ripe black currant. It consisted of two longitudinal portions, about one inch and a half long, and a quarter of an inch broad, projecting slightly above the general surface, and irregular both in breadth and degree of prominence. There were two or three merely superficial stains in the interval between these portions. The surface had been sometimes accidentally broken, with slight bleeding, and subsequent incrustation. I rubbed the two longitudinal portions freely with kali purum; hemorrhage was produced, but ceased spontaneously. Inflammation and discharge from the surface followed, but, at the end of a few weeks, the part appeared exactly in its original state. A

* Ante, Vol. IX. p. 213. Two cases treated in this manner by Mr. Wardrop are reported in the *Lancet*, Vol. XI. p. 653.

† A case, in which caustic potash had been applied to one of these tumours situated on the chest, ended fatally under the observation of Baron Boyer. *Traité des Mal. Chir.* Tom. II. p. 314.

much freer application of the caustic was now made; the surface was broken at many points, and the kali purum was well rubbed into those parts. Considerable inflammation and deep ulceration ensued. The external appearance, after the lapse of a month, was nearly the same as at first. The discoloured part however has become quite firm; it does not grow, nor does it bleed or discharge from slight injury, as before.

Cold applications and pressure* are in the ma-

* The treatment by pressure, which has been recommended in this country by Mr. Abernethy (Surgical Works, Vol. II.), has been employed in many instances by Baron Boyer, who points out the circumstances under which it may be expected to succeed. Having been consulted in the case of a child two years old, who had a nævus in the upper lip, extending to the septum nasi, so that it could not have been completely extirpated, he advised the mother to moisten it frequently with a solution of alum, and to compress it as much as possible with her finger, without expecting that much benefit would result from his advice. The plan however was very assiduously followed up by the mother, who often maintained pressure on the swelling for several hours together. Her perseverance was rewarded with complete success, and no trace of the swelling remained when the patient was seen by Boyer at the age of twelve. He says that he has since cured, by means of compression, many tumours of the same species, situated on the head, and one on the root of the nose and eye-brow; but that, in order to ensure the success of this plan, a solid point of support is necessary, while the compression must be permanent, must act on the entire surface of the tumour, and must be continued long enough to obliterate the cells of the spongy texture, and the vessels which pour their blood into those

jority of instances inefficacious, or inapplicable. They deserve the latter character more especially in infants, and in reference to the most frequent seat of the affection, namely, the face.

The proceeding, suggested by Mr. Wardrop, of tying the arterial trunk or trunks that supply the tumour, can be applicable to very few instances only. The formidable and almost hopeless state of the disease, and the early age of the patient, in whom he tied the carotid artery for a large nævus on the side of the face and head, sufficiently account for the fatal event. Perhaps the free communications between the several arteries of the head may render the carotid an unfavourable ves-

cells. *Traité des Maladies Chirurgicales*, Tom. II. p. 303 and 304.

Baron Boyer observes further, that compression may also prevent the development of these swellings, and remove the congenital mark, which is their precursor, when it is favourably situated. He has seen several instances, one of his grand-daughters being among the number. She was born with a small bright red mark on the right temple. It soon increased, so as to render its nature very obvious, and, at the age of two months, had become as large as the thumb nail of an adult, and had begun to project. A bandage, with a pad rather larger than the mark, was applied in the daytime only, for three years, and removed the affection so as to leave no fear of future growth. The only trace of it is a very narrow line of a light violet tint, corresponding to the circumference of the mark: this has continued in exactly the same state for the last four years. In the space circumscribed by this circular line the integuments are quite natural. *Ibid.* p. 310.

sel for the experiment. In another instance however, this plan has been completely successful; a report of the very interesting case, which does so much credit to the judicious boldness of the operator, will be found in the "Lancet." *

In a case which was lately submitted to my examination at St. Bartholomew's Hospital, I pointed out to the pupils that the size of the tumour rendered excision quite inadmissible, from the double risk of immediate death by bleeding, or of the not much slower fatal influence on a young infant, of so large a wound as would have been required for removing the tumour. I was considering the propriety of using the caustic, when Mr. Arnott informed me that he had seen the ligature employed in two instances by Mr. Anthony White; and

* "Case of Nævus on the Face successfully treated by tying the Carotid Artery; by J. Wardrop, Esq." *Lancet*, Vol. XII. p. 267.

The cases in which the carotid artery was successfully tied by Messrs. Travers and Dalrymple, were pulsating vascular tumours occurring in the adult, or, in other terms, aneurysms by anastomosis. *Medico-Chirurgical Transactions*, Vol. I. and VI.

The carotid artery has been tied, with partial success, by Baron Dupuytren, in an apparently analogous disease situated in the occiput and ear. *Rust's Magazine*, Vol. VII. p. 161. Professor Chelius, of Heidelberg, who quotes the latter case, observes, that "where the anastomoses are considerable, the ligature of the principal arterial trunk will not be sufficient. I have observed a very large vascular tumour (blutschwamm) on the knee, in which the ligature of the crural artery was performed without advantage, and it was necessary to amputate the thigh." *Handbuch der Chirurgie*, 2d Ed. Vol. I. p. 884.

that one of these at least had been successful. I have since found, what had escaped my recollection at the moment, that this proposal is noticed in Mr. Wardrop's paper.—“How far,” says he, “it may be advisable in some cases to remove large subcutaneous nævi by ligature, I cannot from experience decide. Mr. White informed me that he thrust a needle through the middle of a very large subcutaneous nævus on a child's shoulder, and included each half of the swelling within the noose of a ligature. The operation was attended with complete success*.

The following cases will shew that the ligature employed in the mode pointed out by Mr. White, is not only equally efficacious with the knife, but much more safe, and that it possesses another important advantage, which I shall notice afterwards.

CASE I.

J. B. an infant four months old, was brought to St. Bartholomew's Hospital in February, 1827.

* Medico-Chir. Transactions, Vol. IX. p. 215. I find that the use of the ligature is mentioned by the late Mr. John Bell, but in such a manner as to leave it doubtful whether he had ever employed it. Speaking of nævi, he says, “the more protuberant of these tumours may be cut off by a ligature; those which are flatter, though protuberant, have yet a broader base, and may be killed by striking a needle through the base of the tumour, and tying the threads of the ligature on either side. The surest way is the knife”, &c. &c.—Principles of Surgery; a new edition by Mr. C. Bell; Vol. III. p. 430.

At the time of birth, a slight reddish discolouration of the skin, as large as a sixpence, was observed at the upper part of the back ; this red spot was not elevated. Having remained of the same size and in the same state for three months, it began to enlarge, became elevated above the surrounding sound skin, changed its colour from red to a dull purple, and frequently discharged blood from openings on its surface. It continued to grow rapidly until the time of admission, when it presented a circular tumour five inches and a half in circumference, and projecting about three quarters of an inch. Its surface was slightly irregular, of nearly uniform prominence, and a little depressed in the middle ; it was rather larger at the edge than at the base, which rendered the application of the ligature easy. It was of the kind denominated by Mr. Wardrop, subcutaneous nævus. Although the skin had been distended and thus rendered thin by the growth of the tumour, it could be easily pinched up into folds on the surface, so that the disease was decidedly below the integuments. Its connexion to the muscles of the back was equally loose, and it could be moved from side to side with the greatest ease, or drawn up by the finger and thumb, and detached from the subjacent parts. It had a mottled appearance, being mostly of a dark livid colour. It was soft, and gave a sensation to the fingers like a collection of varicous vessels. Pressure diminished it considerably, and made it of lighter colour ; it soon filled again. When the child cried

or strained, it became larger and of a deep purple tint.

On the 17th of February I tied the tumour, elevating it from the muscles of the back with one hand, while I passed a large curved needle under the middle of its basis with the other, carrying the point of the needle in and out again, close to the edge of the base of the swelling. When the needle had been cut out, the two ends of the ligature, which had been left of equal length, formed two distinct ligatures applicable to the immediate purpose of the operation. They were then tied, as tightly as they could be drawn, just in the line of distinction between the tumour and the sound skin. The firm pressure thus made on the base caused a cracking of the tumour at the surface, from which a few drops of arterial blood escaped before the ligature was quite tight. The infant seemed to suffer considerably when the ligatures were tied, the process being attended with considerable dragging and stretching of the surrounding skin, which was thrown into several large folds. A soft rag dipped in cold water was laid over the part, and occasionally moistened. For thirty-six hours the child was restless, crying almost incessantly and occasionally convulsed; at the end of that time it took the breast, which it had previously refused. An inconsiderable oozing of blood took place. On the 19th I sliced off the tumour, which had become almost black. The ligatures were quite loose on the 20th, and I re-

moved them. A large slough occupied the centre of the wound, extending deeply ; it came away in a few days under the application of bread poultice. The wound then granulated and assumed a perfectly healthy appearance, all the unpleasant symptoms having subsided after the removal of the ligatures. The process of cicatrization was slow, but it was at last firmly completed ; and the former situation of this large tumour is now denoted by a very slight scar.

The substance of the tumour, when it was sliced off on the 19th, was tolerably compact : its cut surface presented the sections of numerous blood-vessels, apparently venous, filled with coagulated blood : the largest were equal to an ordinary writing quill. These vessels were connected by a firm greyish substance, of a somewhat fibrous texture. There was no appearance of cells.

What is the nature of such vessels ? The colour of the part during life, the size of the tubes, and the appearance of their coats lead us to suppose that they are veins. How then does it happen that the profuse bleeding, which takes place when the tumour is cut, is arterial ? And how is it that the growth of such structures is arrested, and their absorption produced by tying the principal artery of the part* ?

* In a letter which I received from Mr. Arnott, he made the following observations on the structure of these vascular tumours.

C A S E II.

I was consulted respecting an infant, between four and five months old, who had a cutaneous

“When your paper was read, I observed that in the description of the structure of the tumour which was sliced off two days after you had put a ligature around it, you stated that it presented the section of numerous blood-vessels of large size, without any appearance of cells. You also asked what was the nature of such vessels? remarking that ‘the colour of the part during life, the size of the tubes, and the appearance of their coats lead us to suppose that they are veins.’ You then inquired ‘How does it happen that the profuse bleeding, which takes place when the tumour is cut, is arterial?’ Now, I would observe that although other pathologists have described tumours of this description as being composed of a multitude of cells, into which are distributed a great number of veins and arteries, yet from the examination of several specimens which have been extirpated, I am disposed to think that the appearance of cells may have arisen from a deception which the numerous communications of the vessels with each other produce. The nature of this deception will be best explained by the following extract from Cuvier’s *Anatomie Comparée*, Vol. V. p. 70., where he is describing the structure of the corpus cavernosum penis, the structure of which these nævi in many respects resemble: ‘Le sang ne s’épanche point, pendant l’érection, dans de véritables cellules, formant, comme on le dit, des cavités intermédiaires entre les veines et les artères. C’est un fait dont nous sommes bien convaincus par la dissection de la verge de l’éléphant. Le corps caverneux de cette énorme verge est rempli en très-grande partie de vaisseaux veineux, qui ont entre eux de si larges et de fréquentes anastomoses, dont les parois se confondent et s’ouvrent si souvent pour ces nombreuses communications, qu’il en résulte, dans quelques endroits, une apparence celluleuse.’ Besides the anatomo-

nævus just below the left breast. . A small red speck was observed soon after birth; it increased rather fast, and it had become, when I saw it, as large as half a crown. It occupied the texture of the skin, projecting about one quarter of an inch, having a finely granulated surface and a bright pink colour. I treated this in the same way as

mical structure, some of the phænomena of these subcutaneous nævi resemble those of the 'tissu erectile.' The size of the tumour is capable of alteration, they may be squeezed into a state of flaccidity, evidently arising from the absence of blood in the part, for, on the pressure being withdrawn, they fill again gradually but rapidly, and may be then said to be in a state of erection. The bleeding also, when the tumour is cut, being arterial, is only what likewise takes place when the erectile tissue in the organs of generation is divided."

I think that the structure of these nævi is more analogous to that of the corpus spongiosum urethræ than of the corpus cavernosum. The former, including the bulb and glans, is composed entirely of convoluted veins: this is distinctly visible in the common coarse injections of the human penis, but it is more obvious in some animals, as for instance in the bulb of the dog's penis. The injected corpus cavernosum does not present a similar appearance, and I have not been able to trace in it the venous structure, which is so obvious in the corpus spongiosum. I do not recollect having observed, in amputations of the penis, the circumstance mentioned by Mr. Arnott, that its erectile tissues contain arterial blood.

It appears to me that the existence of cells in these tumours, with arteries and veins opening into them, has not been ascertained by direct examination, and consequently that the notion hitherto rests on superficial observation, or mere supposition. The various comparisons of these productions to the human placenta, to the spleen, to the corpus cavernosum penis, and corpus spongiosum urethræ, and lastly, to the comb and wattles of the fowl tribe, shew that no accurate knowledge exists on the subject.

the other case. The application of the ligatures gave pain, and made the child cry considerably; but it soon became quiet, and no unpleasant symptoms occurred. At the end of forty-eight hours I cut off the dead part and removed the ligatures. The wound, being poulticed, soon became clean, and healed rapidly.

C A S E III.

— Hacker, a child fourteen months old, and still at the breast, was brought to me at St. Bartholomew's Hospital, from a street in the City Road, with a subcutaneous nævus below the inferior angle of the right scapula. It was a fortnight after birth when the mother first observed a small spot, like a stain of the skin, in this situation. In six months it had become much more conspicuous, being of a bluish red and slightly raised, and it has increased rapidly for the last two months. It now forms a soft compressible tumour, two inches in diameter, of which the central part, equal in size to a half crown, is the most prominent, being raised about half an inch above the general surface of the swelling. This raised part has a livid marble appearance, the skin being here closely adherent to the subjacent vascular mass, and indeed identified with it, while the surrounding integument is natural, and can be pinched up from the swelling. The latter, which has a doughy feel, and seems composed of a vascular plexus, is diminished by pressure, and then slowly regains its former size. Its connexions to the parts be-

neath are loose, so that it can be completely drawn up from them.

The successful result of the two former cases determined me to employ the ligature here, as excision would have been formidable from the length of the necessary incisions, and the extent of denuded surface, and even dangerous from the copious bleeding that might have been expected. The use of the ligature did not seem to me, however, free from danger, as it would be necessary to apply it in the sound skin, and to include a circle of more than two inches in diameter. I used the double ligature in the way already described on the 19th May, drawing the knots as tightly as I could, in order to destroy immediately the included mass. The child, which had been taken home to the City Road from the hospital, was fretful and restless, and a little feverish on the following day; but she had slept and taken the breast tolerably well.

On the 21st she was brought to St. Bartholomew's, when I found the tumour quite black, without any surrounding inflammation. I cut off the principal portion of it with a scalpel, and removed the ligatures, on which the folds of the skin produced by their application immediately disappeared. Active aperient medicine was ordered, as the bowels had not been open since the operation, and a bread poultice was directed to the part. The removed portion was firm, and presented in a section a dark

colour, like that of black currant jelly. When closely examined, it was found to be made up entirely of divided vessels, filled with coagulated blood.

23d. The mother stated that the child cheered up immediately after the ligatures were removed; the bowels were soon freely opened; she is now perfectly well, and the aspect of the wound quite healthy.

24th. The remainder of the mortified part has separated, leaving a clean and healthy granulating surface.

21st July. The cicatrix is not yet quite complete; but not a vestige of the morbid structure remains.

CASE IV.

Sarah Humphries, a very healthy child, nearly six months old, had at the time of birth, a small stain-like speck on the skin, but little discoloured, and not elevated, below the right eye. In a few days it became of a purplish red tint; and in a month or six weeks it was evidently increasing, and rose above the level of the skin. At the end of three months it had attained the size of a hazel nut, and it is now equal to a large walnut. The middle of the tumour forms a light purple circular elevation of the skin, equal in diameter to a shilling, about an inch below the edge of the lower eyelid; its basis is much larger, extending under the sound skin, and making the entire cheek much more pro-

minent than the opposite. The base is not clearly defined ; yet the swelling can be elevated from the subjacent parts. It is soft, and can be lessened by pressure, which renders the colour of the central prominence fainter.

On the child's back, near the spine of the left scapula, is another swelling, as large as a pigeon's egg, situated under the skin and adipous membrane, which are perfectly natural, being loose over the swelling, so that they can be pinched into a large fold. It is free from pain, and disappears almost entirely on pressure, slowly reappearing when the pressure is removed. From these circumstances it is considered to be a vascular growth, similar in character to that on the face. It is nearly three months since this swelling was first noticed : it was then very small, but has gradually enlarged.

The active growth of the nævus on the cheek required that some means of checking it should be immediately resorted to, while the magnitude of the swelling, the indefinite extent of its basis, and the neighbourhood of the lower eyelid, formed strong objections to excision ; I therefore determined to adopt the plan of tying.

June 27th.—A needle with a double ligature was passed through the basis of the nævus, in the

perpendicular direction, which appeared preferable to the horizontal, as being less likely to disturb the lower eyelid. The ligatures were tied on each side, so that each included half of the tumour. When the outer ligature had been fastened, it was observed that it did not include the whole of the discoloured skin, a small and extremely narrow slip was beyond the circle of the thread. Arterial blood flowed from the track of the needle; but it stopped when both ligatures had been tightened. The cheek was covered with a soft rag, dipped in cold water, and kept constantly damp.

28th.—Redness and swelling of the cheek, eye, and upper lip; the latter circumstance prevents the child from sucking. She is hot and feverish. She was very fretful for several hours after the operation, and would not take the breast. Some syrup of poppies was given to quiet her at night; she then got a little rest. She has been very ill all the morning, and breathes with difficulty. The bowels have not been opened. The tumour is now pale white, and smaller than before the operation.

Intending to remove the ligatures at the end of twenty-four hours, I cut through the outer one, when the whole tumour became immediately distended with blood, regaining its original size and purple colour. A few drops of blood flowed down the cheek. Of course I did not remove the other

ligature. Three grains of Calomel to be taken directly, and a tea-spoonful of Castor-oil in three hours; to be repeated, if necessary.

29th.—The surface of the tumour is mortified, and of a dark-black colour. The redness and swelling are considerably diminished. The bowels have been freely relieved, and the skin is cool. The inner ligature was cut away.

July 1st.—The cure proceeds favourably in all respects, the irritation and pain being less than could be expected. As the slough is dry and hard a poultice is ordered.

July 3d.—The slough came away this morning, leaving a tolerably healthy ulcer, of the size of a crown piece.

5th.—She is pale and peevish to-day, with impaired appetite and rest; the stools are green and slimy. In the centre of the ulcer are two or three large prominent granulations, of a livid red colour; the others are pale, flabby, and less elevated. Occasionally there is a slight discharge of blood from the surface. Five grains of the Hydrarg. cum Cretâ every night. The livid granulations to be touched with the nitrate of silver.

14th.—The Nitrate of Silver has been applied freely three or four times. The sore and the health

are much improved, and the former is cicatrizing rapidly: it no longer bleeds, but secretes very healthy pus. The livid points of doubtful character still remain in the centre. The Nitrate of Silver to be freely applied to the livid parts every other day, and the bread poultice continued.

23d.—The sore is considerably diminished, being now reduced to the three prominent masses before described. The small portion of purple skin, not included in the ligature, is rather broader than it appeared when the ligature was removed, and has the bright tint of the original tumour. The Nitrate of Silver was well rubbed on it to-day, and on the rest of the sore.

25th.—The purple portion of skin has been destroyed by the caustic, and cicatrization is proceeding favourably*.

The superior safety of the ligature, in reference to the danger of hemorrhage, is rendered obvious by these cases. In the first I would not have performed excision, feeling satisfied that immediate death from bleeding would have been inevitable. There would have been less risk in leaving the case to nature. But, supposing this danger to

* The sore soon healed, but with some appearance of remaining disease: this has become more considerable, so that at the time this sheet is passing through the press, it is doubtful whether another operation will not be necessary.

have been surmounted, the patient would have been in a much more dangerous state with the great wound of excision, than with the comparatively small breach of surface caused by the ligature. It would have been necessary to make an elliptical incision, with each side at least four inches long. The ligature is applied close to the base of the tumour, while it would be necessary, in order to clear the diseased part, to keep half an inch from it with the knife. This is an important advantage on the side of the ligature in the numerous instances where extensive loss of skin would cause deformity.

The knife might have been safely used in the second case; but the operation would have been serious, and the loss of blood considerable; while, with the ligature, the latter was entirely avoided, and no symptom of the smallest consequence occurred.

The treatment by excision in the third case, would have involved the necessity of a very large wound, and the risk of fatal hemorrhage. The latter danger would have equally attended the same practice in the fourth instance; a large wound would have been required, running very near to the edge of the lower eyelid, with a great probability of eversion on the contraction of the cicatrix.

Our object, in this mode of treatment, is to in-

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tercept the circulation completely in the tied part, and thus to deprive it of vitality as speedily as possible. The ligatures must be drawn very tightly, and ought therefore to be so strong as to bear the utmost force we can employ with the fingers and thumbs without breaking. Stout silk-twist will answer the purpose ; but we should observe the precaution of trying its strength previously. As it is necessary, in some instances, to include a large bulk of parts, their complete strangulation is not easily effected, however strong the ligature may be. Perhaps it might be advisable, under such circumstances, to adopt the proceeding recommended by Mr. Mayor * of Lausanne.

As the continued pressure of the ligatures keeps up irritation in the parts immediately constricted, and in those around, which are forcibly dragged together and puckered, it is desirable to remove them as soon as we can be certain that the objects of their application are accomplished, namely, coagulation of the blood in the vessels composing

* In a work entitled, " *Essai sur les Ligatures en Masse*, 8vo, Paris, 1826," this gentleman, who is surgeon to the hospital of the Canton de Vaud, recommends a method, by which ligatures placed round thick or firm substances, may be tightened to any degree that may be desired, and firmly fixed in that state. He uses a small instrument like some kinds of tourniquet, fixing the ends of the ligature to a cylinder which turns on its axis, and which is held in any position, to which it may be brought, by a small spring and rack.

the tumour, and death of the part. The foregoing cases prove that these purposes are fully effected in forty-eight hours, while the fourth shews that we cannot safely trust to a compression of one half that duration. The danger of inflammation or irritation is at an end as soon as the ligature is taken away, and the relief to the patient from its removal is very obvious.