Excision of the eyeball in cases of melanosis, medullary carcinoma, and carcinoma : with remarks / by J. Argyll Robertson.

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EXCISION OF THE EYEBALL IN CASES OF MELANOSIS, MEDULLARY CARCINOMA, AND CARCINOMA;

WITH REMARKS.

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In the course of my practice, I have been called upon to perform the operation of excision of the eyeball in sixteen of the following cases, in which that organ was affected with diseases reputed malignant:—

Melanosis.

1.	James Cowan,	æt.	50,	cured.
2.	Jane Murphy,	...	58,	cured.
3.	Alexander Nicol,	...	47,	cured.
4.	David Wilson,	...	52,	cured.*
5.	John Cross,	...	49,	doubtful.
6.	Mrs Kerr,	...	55,	cured.

Medullary Carcinoma of the Eye.

7.	Elizabeth Williamson,	æt.	8,	returned.
8.	Jane M'Pherson,	...	1½,	returned.
9.	Peter Johnston,	...	5,	returned.
10.	John Richardson,	...	4,	returned.
11.	John Graham,	...	56,	cured.

Scirrhus and Medullary Carcinoma of Appendages of Eye.

12.	James Grant,	æt.	60,	cured.
13.	John Williamson,	...	62,	returned.
14.	Robert Wilson,	...	60,	returned.
15.	William Ross,	...	50,	cured.
16.	Mrs Walker,	...	62,	cured.
17.	Grizzel Syme,	...	60,	died.

MELANOSIS.

It is only since the beginning of the present century that the attention of the profession has been directed to this peculiar morbid condition, and its true characters are as yet in a great measure unknown.

* Operated on by my colleague Dr Duncan.

Müller, in his work on Cancer, considers it as a mere variety of that disease, and terms it carcinoma melanosis. It would appear, however, that he has come to this conclusion without sufficient data. The only fact indeed which he adduces is, "that he has often seen carcinoma reticulare of the eye and of the orbit combined with melanosis, some lobules of the morbid growth being more or less completely occupied by melanosis, while other parts displayed the ordinary network made up of white corpuscles characteristic of carcinoma reticulare."

Although in many cases we find tumours of a truly carcinomatous character, more or less spotted with melanotic matter, or even with masses of this substance deposited in them, and though such tumours are accompanied by all the pathognomonic symptoms of carcinoma, and follow the usual course of that affection, nevertheless these circumstances afford no proof of any similarity between the two deposits, or of any necessary connexion between the two diseases. On similar grounds we might arrive at the conclusion, that simple fibrous tumours are a variety of carcinoma, because we often meet with these taking on a malignant action, and find a carcinomatous deposit in their structure.

On the other hand, cases of pure melanosis are constantly occurring, which do not present in their structure, or in the symptoms which attend their progress, almost a single symptom of carcinoma.

Melanosis is, in so far as is known, an unorganized mass, neither vessels nor nerves being to be traced into its substance. Hence it is incapable of assuming any morbid action, or of propagating such to contiguous parts, and produces no effects but what are dependant on its mechanical agency. In all of these respects it differs most essentially from carcinoma. In melanosis no pain is complained of but what may justly be attributed to the effects of mechanical pressure or distention. Hence, when seated in parts of a loose texture, little or no suffering is experienced; or, if seated in parts of firm texture, in which it gives rise to pain from distention, that pain is at once relieved by removing the state of tension, as by incision. This occurred in two cases within the eyeball, in which the pain, tension, and throbbing, under which the patients suffered, were at once abated by a puncture allowing the escape of a portion of the fluid contents of the eyeball mixed with the melanotic matter, thus showing that the pain was not seated in the deposit, but was dependant on its mechanical action. In carcinoma, on the contrary, the pain is in the tumour itself, is not caused by distention, nor is it relieved by incisions. Melanosis by its pressure may effect the absorption or ulceration of the surrounding parts, but these do not, as in carcinoma, assume any peculiarity of action. When the skin covering a melanotic tumour gives way, it appears to be by absorption. The edges of the opening thus formed in the skin are neither everted nor thickened, the discharge is without fetor, there is no hemorrhage or sloughing, there are no fungous

protrusions, and the growth of the tumour is owing to the vessels of the surrounding textures continuing their abnormal secretion. In carcinoma, on the contrary, the skin becomes affected with malignant ulceration, and fungous protrusions take place, accompanied by fetid discharge, hemorrhage, and sloughing.

Although melanotic deposits are often met with, in the same manner as tubercles, distributed in various organs in the same individual, I am not aware of any instance of the disease being propagated to the neighbouring glands by absorption, as we see in carcinoma.

In the six cases operated upon, incisions were made into the tumours some time prior to operation, and serous fluid tinged with the black deposit escaped. There was no bleeding, and no subsequent fungous protrusion such as occur in carcinoma. Further, melanosis, in as far as I have had an opportunity of learning, occurs only beyond the middle period of life.

Finally, the result of excision of the eyeball in cases of melanosis and medullary carcinoma, proves the dissimilarity of the two diseases. In all the cases in which the melanotic deposit was within the eyeball, so as to render its entire removal certain, a cure was effected; whereas in only one case of medullary carcinoma did success follow the operation. In unsuccessful cases of medullary carcinoma, large fungous growths, accompanied by severe pain, frequent bleedings, and profuse fetid discharge, followed; whereas in the case of melanosis, in which the success of the operation was doubtful, there was no protrusion, no hemorrhage, and the only local symptom which indicated that the disease might not have been eradicated, was a constant pain in the back part of the orbit, and a sanious discharge. From the hollow condition of the orbit, and contracted state of the eyelids, the surface of the cavity could not be well examined. The patient died from an apoplectic seizure eleven months after the operation. No post mortem examination took place. Even in this case it is doubtful whether the disease remained in the orbit after the operation. It was more likely to do so in this instance than in the others, as the melanotic matter was not limited to the interior of the eyeball, but occupied nearly the whole orbit, and consequently its entire excision could not with certainty be determined.

Symptoms of Melanosis.—This disease may commence either within the eyeball or in the orbit exterior to that organ. In neither case are marks of inflammation necessarily present. When it takes its origin within the sclerotic, vision is impaired and ultimately lost. In the early stages I am not aware of any means of diagnosis between this affection and amaurosis. The pupil in both is dilated, and presents the same horny, black colour; and the iris remains stationary under every change of light. But as the melanotic deposit increases in quantity, the iris and lens are pushed forwards towards the cornea, so as to diminish or altogether to obliterate the anterior chamber. At this

period the lens usually becomes opaque, but sometimes remains transparent, and the iris appears to be diminished in thickness, and perhaps altered in colour, and its pupillary margin is generally irregularly oval, the greater diameter being transverse. The patient now complains of an uneasy fulness in the eye, accompanied by occasional attacks of pain and throbbing, and tortuous vessels are seen on the conjunctiva. As the tumour increases in bulk these symptoms become more severe, until interstitial absorption of the sclerotic takes place, allowing of the projection of the mass beyond the natural limits of the eyeball, and thereby relieving this organ from distention. This absorption of the sclerotic usually occurs near the margin of the cornea, and between the tendons of the straight muscles where the sclerotic is thinnest and most readily yields. The projection is generally in the form of irregular nodules, as if constricted in certain points where some fibres of the sclerotic have not yielded to the same extent as others.

At this stage melanosis is very apt to be mistaken for dropsical effusion under the choroid, conjoined with amaurosis. In all the cases of this latter affection which I have seen, the iris was drawn behind the sclerotic in the direction of the protrusion, to such an extent in some instances as to be rendered invisible at that side of the eye—whereas I have not seen any such change occur in any case of melanosis. The probable cause of this difference in regard to the iris is, that when the melanotic matter is deposited between the sclerotic and choroid, no traction will be applied to the latter membrane, whereas in dropsy within the choroid, that membrane will be bulged outwards and subjected to traction, and will drag along with it the corresponding portion of the iris; for the adhesion of the iris to the choroid being much stronger than to the ciliary ligament, the latter connexion gives way. This condition of the iris will, I believe, prove a means of judging whether tumours or dropsies are internal or external to the choroid,—in the former the iris retaining its natural position, in the latter being drawn towards the protrusion. So similar are the appearances of melanosis and sub-choroid dropsy, owing to their sameness of colour, that in two instances of the latter disease I saved eyes which had been doomed to excision. Any doubt as to the true nature of the disease may at once be set at rest by puncture. If it be dropsy, a little fluid will escape, and the swelling immediately subside; if melanosis, a drop or two of black matter may ooze out, but with little or no change in the size of the projection.

After the tumour has passed through the unyielding sclerotic by the process of interstitial absorption, it pushes before it the conjunctiva, which, from its texture and loose connexions to subjacent parts, readily yields, and affords it a covering. When it projects much beyond the eyelids, the secretion of the conjunctiva hardens upon its surface, giving it a horny coating of a yellow colour. [See Figs. 1 and 2.]

I have had no opportunity of witnessing the progress of melanosis of the eye beyond this stage; but, judging from what takes place in other parts of the body, and the result of a case related by the late Allan Burns (as an instance of medullary tumour, for at that time the distinction between the two diseases was unknown), in which the disease returned after excision, we may conclude that additional melanotic matter would continue to be deposited, that the vigour of the constitution would give way, and the patient sink in a state of exhaustion.

When the disease commences in the orbit *exterior* to the eyeball, vision is not impaired at so early a period, nor indeed until the tumour has increased to such a bulk as to force the eyeball from its socket, and, by compressing and stretching the optic nerve, has deprived it of its sensibility.

The latter stages will necessarily be alike in both cases.

The following tabular view shows the age and sex of twenty-three patients operated on (the first six were under my care), and the result of the operations :—

Cases of Melanosis operated on by Dr Robertson.

Name.	Age.	Result.	Remarks.
1. James Cowan,	50,	Cured.	Died two years after operation from disease of heart—orbit healthy.
2. Jane Murphy,	51,	Cured.	No return of disease six months after operation.
3. *Alex. Nicol,	47,	Cured.	Died three years after operation from melanotic tumour, involving hip-joint, ilium, and sacrum—orbit healthy.
4. *David Wilson,	52,	Cured.	Is at present in good health, two years having elapsed since operation. There is a small melanotic deposit above cornea of other eye, which has now existed for nine years without change.
5. *John Cross,	49,	Doubtful.	Died, with symptoms of apoplexy, ten months after operation; discharge of fetid sanies from orbit for two months prior to death, but without any melanotic tinge, and no tumour.
6. Mrs Kerr,	55,	Cured.	Died two years after operation—orbit healthy—no melanotic deposit in any part of body. Liver enormously enlarged and of soft texture.

* These three patients were from the same neighbourhood, the coast of Fife. David Wilson was operated on by my colleague Dr Duncan, during my absence from hospital duty.

Cases from other Authorities.

Authors.	Age.	Sex.	Result.	Remarks.
7. Allan Burns, Anatomy of Head and Neck.	41	female	died	Melanotic deposit (soft substance of an ink-colour) in antrum maxillare, orbit, liver, and above kidneys.
8. Fawdington.....	30	male	died	Melanosis of cellular tissue of thorax and abdomen, liver, spleen, pancreas, kidneys, peritoneum, pleuræ, lungs, and head.
9. Liston, 6th vol. Lond. Med. Gaz.	52	male	cured	
10. Mackenzie, Diseases of Eye.	40	male	cured	
11. Lawrence.....	30	male	cured	
12. Carsewell & Cullen, Ed. Med. Chir. Trans.	51	male	died	Melanosis in cellular tissue, pleuræ, on diaphragm, in lungs, pericardium, heart, liver, spleen, kidneys, omentum, peritoneum, internal table of skull.
13. Wardrop on Fungus Hæmat. p. 81.	58	female	cured	
14. Dr Rosas, Vienna Hospital.	50	female	cured	
15. Do.....	78	female	cured	
16. Dr Holscher, Hanover, Oph. Obs.	64	male	cured	Died of exhaustion a year after operation.
17. Dr A. Reuss, Prague, de Mel. Ocul.	48	female	cured	
18. Zimmerman, Berlin.	55	male	cured	
19. Dr Autenberger, Vienna, Ophthalmic Hospital.			cured	From numerical statement of cases treated in the Vienna Ophthalmic Hospital, age and sex not given.
20. Do.....			cured	
21. Do.....			cured	
22. Do.....			cured	
23. E. L. Birkett, Guy's Hospital Rep. Oct. 1844.		male	cured	

The above tables clearly show the difference which exists between melanosis and medullary carcinoma. In the vast majority of cases of medullary carcinoma within the orbit, the disease occurs in childhood; whereas there is not a single instance of melanosis under thirty years of age. It is doubtful if there be one well-authenticated case on record of medullary

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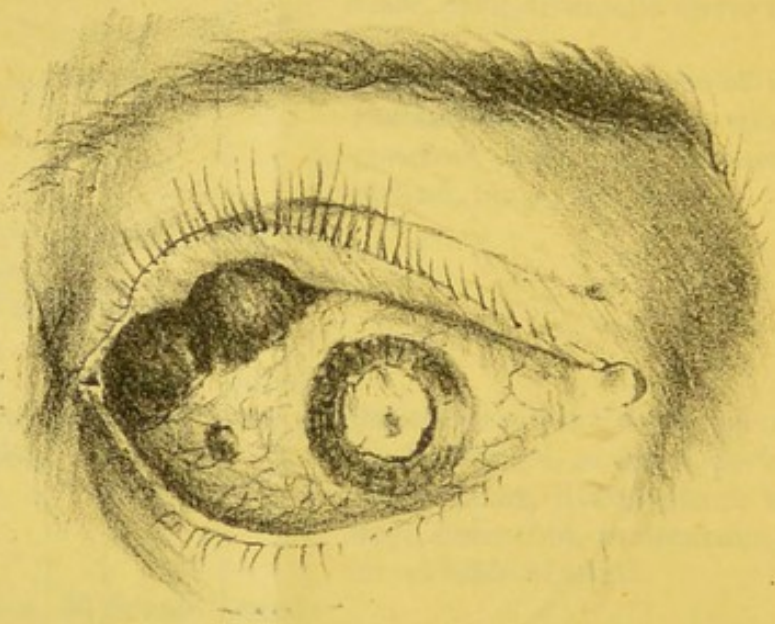

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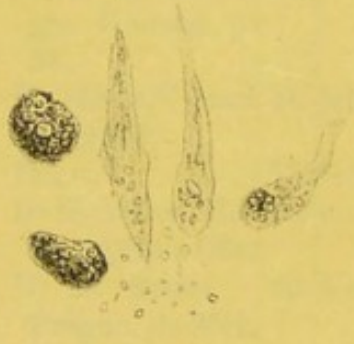

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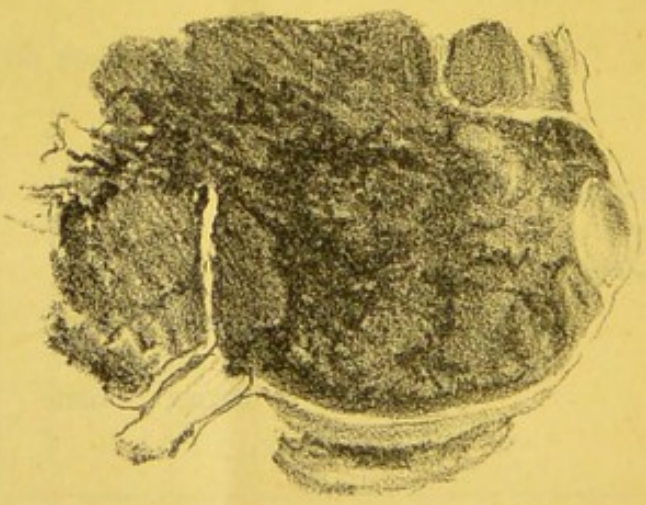

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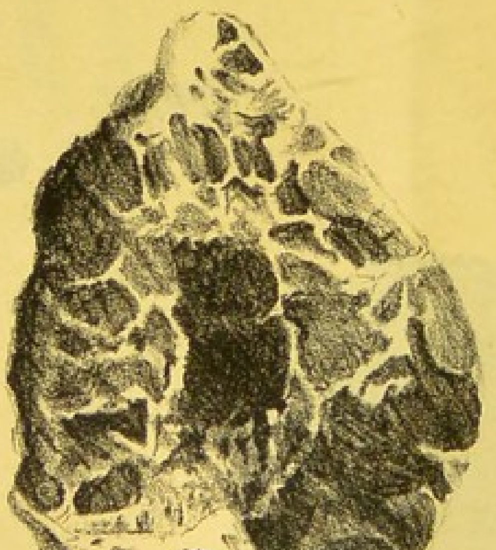

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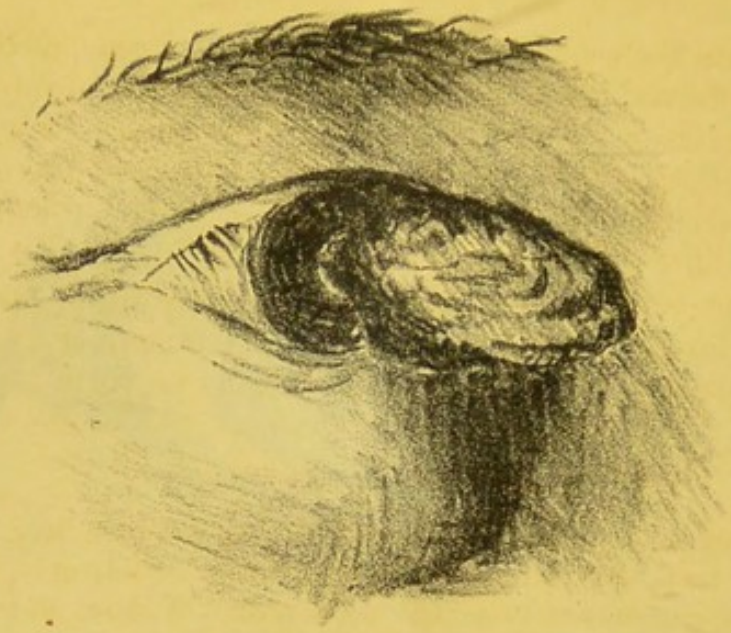

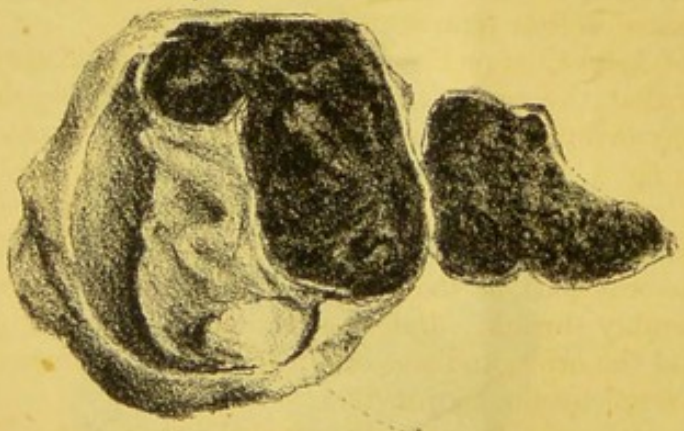

Dr. Shaw fec.

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carcinoma within the eye cured by operation, whereas, of twenty-two patients affected with melanosis, no less than eighteen recovered after excision of the contents of the orbit, and in one it was doubtful whether or not there was any return of the disease. In the three patients who died, the melanotic matter was deposited in many different organs, chiefly in those of the thorax and abdomen. The conclusion appears to be inevitable, that melanosis cannot be classed as a species of carcinoma, or even as a malignant disease, in the usual acceptation of the term.

EXPLANATION OF FIGURES.

Fig. 1. Drawing taken from the eye of James Cowan, æt. fifty, prior to operation. The melanotic tumour had penetrated the sclerotic coat near the margin of the cornea, and projected to the extent of about an inch, still covered by the conjunctiva. The secretion of the conjunctiva is hardened upon its surface (in consequence of the eyelids no longer covering the tumour), and gives to it the peculiar yellowish brown colour and horny hardness.

Fig. 2. Exhibits a section of fig. 1 after excision. The melanotic mass is situated between the sclerotic and choroid, and has pushed the retina, choroid, and lens towards the centre and anterior part of the globe. The melanotic cells, under the microscope, present a spherical shape, and are full of young. Many are of a tawny colour, others quite black. The microscopic appearances in the other cases were similar to the present.

Fig. 3. Section of eye of Mrs Kerr, æt. fifty-five, after excision. The melanotic matter is deposited in a mass between choroid and sclerotic. The internal structure is the same as that represented in fig. 2.

Fig. 4. Section of eye of John Cross, æt. forty-nine. From the history of this case it would appear that the tumour commenced within the eyeball, and gradually made its way through the coats of that organ; but instead of projecting forwards, as in fig. 1, the melanotic matter was deposited in the cellular substance of the orbit, so that it is seen divided by septa of that tissue into masses of variable size. The eye itself is completely filled with the black deposit, and the only part of that organ which can be traced is the sclerotic coat considerably shrunk. Before excision the tumour projected considerably beyond the orbit, and was of a nearly uniform brownish black colour, and still covered by the conjunctiva.

This patient died of apoplexy nineteen months after the operation. It is possible that the deposit of melanotic matter may have continued after the operation, and made an entrance within the calvarium, and thus have given rise indirectly to the sudden apoplectic attack, and therefore the result of this case is noted as doubtful. But this was by no means a probable occurrence, seeing that there was no obstacle to the deposit continuing to take place in its former seat after the removal of the contents of the orbit. It is much more likely that the apoplexy was produced by altogether different causes, or if by a melanotic deposit within the calvarium, that such was unconnected with the tumour in the orbit which was removed. Unfortunately no examination of the body after death was allowed.

Figs. 5 and 6. Drawing and section of eye removed from David Wilson, æt. fifty-two. In this case the humours of the eye have been pushed forwards, and have been converted into a mass of gritty earthy matter enclosed in a

firm fibrous capsule, occupying the place of the iris and anterior chamber. The melanotic matter is deposited in the posterior part of the eyeball, and in the cellular texture external to the sclerotic, and in that of the eyelid, the whole communicating through an opening in the sclerotic. In regard to this patient, Dr Cunningham of Kirkcaldy writes to me (12th Oct. 1844), "I visited David Wilson to-day, and found him in the enjoyment of excellent health; he has been engaged since January 1843 at his old employment, that of weaving, and says, he can do a good day's work yet. There is not the slightest appearance of any return of the disease in the left orbit, and in the right, where you may remember there were also appearances of melanosis, the disease appears to me to remain stationary. He has no pain, and has never lost a night's sleep since the healing of the sore caused by the operation."

This case is highly important in a practical point of view. We have melanotic matter deposited in both orbits. In the left it makes rapid progress, causing loss of sight, destruction of the eyeball, and much suffering accompanied by great constitutional disturbance and debility. In the right eye the disease remains stationary. Notwithstanding the existence of the disease in both orbits, we deemed it prudent to excise the contents of the left orbit, and the result has proved that our judgment of the case was correct, seeing that there has been no return of disease in the orbit operated upon, and that the melanotic deposit still remains perfectly quiescent in the right eye, now nearly nine years since its commencement, and that the patient has been restored to perfect health, and is "able to do a good day's work yet at his trade of weaving."

58, Queen Street, Edinburgh,
15*th October* 1844.