UNUSUAL SIZE AND EXTENSION OF A
PITUITARY ADENOMA

CASE REPORT OF A CHROMOPHobe TUMOUR WITH UNUSUALLY EXTENSIVE
COMPRESSION OF THE BASE OF THE BRAIN, AND REVIEW OF THE
LITERATURE ON THE PATHWAYS OF EXTENSION OF THESE TUMOURS

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Owing to their classical symptoms, adenomas arising from within the
sella turcica are rarely permitted to attain any considerable growth
before being submitted to operation. This is particularly true of the
secreting chromophil adenomata,* but the chromophobe variety may grow
to a very large size and, in cases of unusual fixation of the optic chiasm, may
do so without compressing the decussating optic fibres. In the rare instances
where operation has been overlong deferred these neoplasms tend to extend
into unusual areas, with the result that diagnosis may become a difficult
problem and the predominant symptoms may lead to operation directed
against the extension rather than the primary growth. These parasellar ex-
tensions not only produce profound alterations in the characteristic clinical
syndrome, but complicate the surgeon’s task to a degree where his operative
mortality may become prohibitive. In Dr. Harvey Cushing’s series of 338
adenomas (as reported by Henderson) and in Jefferson’s 128 cases, some
degree of unusual extension into the parasellar structures occurred in as
high a ratio as 22 per cent of the former and 14 per cent of the latter.

To judge from the scarcity of published clinical reports, little attention
has been paid to this potential danger. Such complications may result either
from failure to establish an early diagnosis, overenthusiastic and prolonged
attempts to control the growth by radiation, or procrastination on the part
of the physician. Cushing mentioned only 2 specific examples and Henderson,
in his detailed study of 338 pituitary tumours operated upon by Dr.
Cushing, devoted little space to them and mentioned only four pathways of
extension. A brief reference to these unusual extensions in Dr. Cushing’s
cases is also made in the survey of the Brigham series made by Dott and
Bailey. By far the most important paper on this subject was given by Jeffer-
son in 1940 in his President’s address before the Royal Society of Medi-
cine. Unfortunately this article has been published only in the Proceedings
of the Society, so it can have come to the attention of but few medical read-
ers in this country. Jefferson cites three main factors in the production of
extrasellar extensions: (a) the growth urge of the adenoma, (b) the state of
fixation of the chiasm, and (c) the shape of the pituitary fossa and the nature

* Even the chromophil adenomata may, on very rare occasions, reach a large size and extend into
unusual areas, as occurred in a patient of Dr. Cushing’s reported by Dott and Bailey.
of its diaphragm. His paper should be read by all who have to deal with these tumours and are interested in the mechanism of their spread.

Six possible pathways of extension have been found at operation or post mortem after the expanding adenoma has escaped the usual boundaries of the pituitary fossa:

1. **Pharyngeal extension**: The commonest pathway of growth is downward by bony absorption of the sellar floor, so that the tumour expands into the sphenoid sinus. This situation has long been recognized, as it is easily diagnosed by x-ray. As tumour extension into this area involves no important structures, it produces no outstanding clinical signs unless erosion continues into the nasopharynx. The patient is then likely to complain of discharge and increasing nasal obstruction. A mass can usually be visualized in the roof of the nasopharynx. According to Henderson there were 8 of these complications in Dr. Cushing’s series. Bailey and Cutler have recently described such a case where nasal obstruction was the predominant symptom. Resection and biopsy of a “nasal polyp” revealed a chromophobe adenoma of pituitary origin. This woman had unusually extensive destruction of the sella, and at necropsy the tumour was found to have eroded through its floor and the sphenoid sinus directly into the nasal cavity. From its microscopic appearance this tumour was classified as a malignant adenoma. Extensive erosion and rupture into the nasopharynx have also been observed in rare cases of carcinoma of the pituitary, which have been summarized by Ewing.

2. **Hypothalamic extension**: This is caused by projection of the tumour directly upwards into the third ventricle behind a prefixed chiasm, as is so frequently the case with craniopharyngiomas. Here the usual symptoms, apart from visual disturbances, are headache and drowsiness, with possible evidence of injury to the autonomic centres. Jefferson points out that temperature variations and cardiac or respiratory alterations are not common with tumours that merely indent the hypothalamus without actually invading its walls, but polydipsia and polyuria may be produced by involvement of the supraoptico-hypophysial tract. Since tumour filling the third ventricle blocks the outflow of the cerebrospinal fluid, headache of the severest type with papilloedema may occur in this variety.

3. **Temporal extension**: A lateral escape of tumour cells between the optic chiasm and the cavernous sinus may result in proliferation of the growth in the middle fossa. It will then compress the optic tract and the medial portion of the temporal lobe. This will result in an homonymous hemianopsia, and frequently in Jacksonian seizures preceded by an olfactory aura. Striking examples are illustrated in Cushing’s book and in the more recent articles of Vosskühler and Jefferson.

Henderson has also mentioned a possible extension into the sylvian fissure, in which the adenoma grows laterally but in a more upward direction.

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*This is classified as “thalamic extension” in Henderson’s paper, but Jefferson’s preference for hypothalamic seems more logical.*