

## A NOTE ON THE COURSE AND DISTRIBUTION OF THE NERVUS TERMINALIS IN MAN

ROLLO E. McCOTTER

*From the Department of Anatomy of the University of Michigan*

### TWO FIGURES

Johnston ('13) was the first observer to determine the presence of the nervus terminalis in man. He first reported its occurrence in human embryos and later ('14) described the nerve for the adult. Brookover ('14), working independently, also observed the presence of this nerve in adult man. Apparently the material used by these authors permitted only of the examination of a portion of the intracranial course of this nerve. It is the purpose of the present paper to report observations on the intracranial course and nasal distribution of the nervus terminalis in man.

The observations about to be reported are based on gross dissections of prepared specimens of the heads of several human fetuses varying in age from ten weeks to the newborn. Two adult heads were examined. The nervus terminalis was identified in all the specimens. Drawings were made from the two most favorable dissections. Figures 1 and 2 represent such drawings. The former represents the medial sagittal dissection of the head of a six-months human fetus, the latter a similar dissection of a ten-weeks human fetus. For purposes of dissection the specimens were prepared as described by the writer ('12) in a previous communication.

The intracranial portion of the nervus terminalis, as shown in figure 1, appears on the surface of the brain in the region of the olfactory trigone and courses anteriorly over the medial surface of the olfactory tract and bulb and on to the lateral surface of the crista galli, to pass through foramina in the cribri-

form plate well forward. In its course over the medial surface of the olfactory tract it will be seen that the nerve forms a compact bundle of nerve fibers. On the medial surface of the olfactory bulb, however, it breaks up into a close plexus of fibers intimately associated with the fila olfactoria. It forms

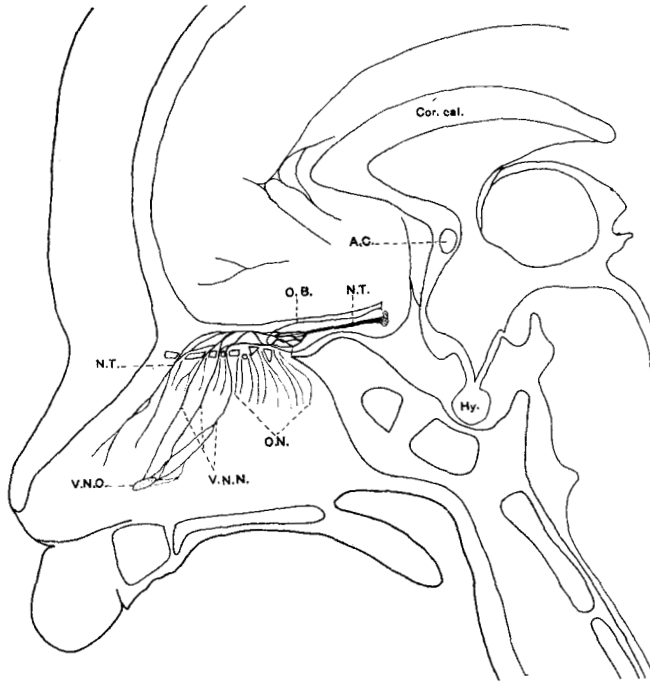


Fig. 1 Medial section of the head of a six-months human fetus with the nasal septum removed, showing the origin, course and distribution of the nervus terminalis. *Cor. Cal.*, corpus callosum; *A.C.*, anterior commissure; *N.T.*, nervus terminalis; *O.B.*, olfactory bulb; *O.N.*, olfactory nerves; *V.N.N.*, vomero-nasal nerves; *V.N.O.*, vomero-nasal organ; *Hy.*, hypophysis.

a loose plexus on the lateral surface of the crista galli imbedded in the layers of the dura mater. In this position the separated filaments of the nervus terminalis lie some distance dorsal to the cribriform plate of the ethmoid bone instead of lying directly on its upper surface as do the fila olfactoria. In the specimens examined the height to which the nerve attains on the lateral surface of the crista galli or the amount of arching upward of

the filaments of the nervus terminalis in this region, depends apparently upon the degree of development of the crista galli.

The distribution of the nervus terminalis to the nasal septal mucosa is similar to that described by Huber and Guild ('13) for the rabbit. Within the cranium filaments of the nervus terminalis join the olfactory and the vomero-nasal nerves and

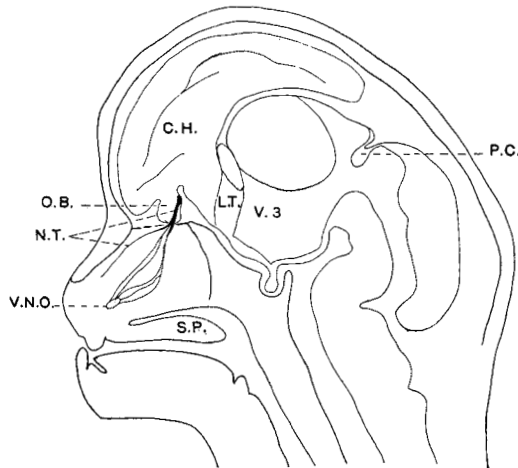


Fig. 2 Medial section of the head of a 4.5 cm. human embryo, with the nasal septum removed to show the origin, course and distribution of the nervus terminalis. *C.H.*, cerebral hemisphere; *L.T.*, lamina terminalis; *N.T.*, nervus terminalis; *P.C.*, posterior commissure; *O.B.*, olfactory bulb; *S.P.*, soft palate; *V.3*, third ventricle; *V.N.O.*, vomero-nasal organ.

apparently pass to the septal mucosa with them. The majority of the fibers, however, form a single strand and pass through the cribriform plate anterior to the exit of the vomero-nasal nerves. Upon reaching the nasal cavity the nervus terminalis takes a path anterior to that of the vomero-nasal nerves, lying just posterior to the antero-superior border of the nasal septum. In figure 1 it is represented as breaking up into three main filaments which can be traced downward nearly to the level of the vomero-nasal organ. In the first part of its nasal course it is joined by a small filament from the medial nasal branch of the anterior ethmoid nerve.

In figure 2 the long axis of the olfactory tract and bulb occupies a plane approaching the perpendicular instead of the horizontal, as is shown in figure 1. The nervus terminalis appears on the surface of the brain in relatively the same position as in figure 1 and passes directly downward to the cribriform area where it lies in close proximity to the vomero-nasal nerves. After sending a few strands to accompany the vomero-nasal nerves the larger portion of the nervus terminalis passes through the cribriform area and is distributed to the septal mucosa anterior to the path of the vomero-nasal nerves.

In conclusion it may be stated that on account of the relation of the nervus terminalis to the crista galli, where the latter is sufficiently developed to cause a stretching out, as it were, of the overlying dura mater with its contained nerve, the continuity is here usually lost in gross dissections and the fibers associated with the vomero-nasal and olfactory nerves alone remain to determine its distribution to the septal mucosa.

The distribution of the nervus terminalis in man as in the rabbit is mainly to the mucosa of the nasal septum anterior to the path of the vomero-nasal nerves. Their ultimate terminations could not be determined.

#### LITERATURE CITED

- BROOKOVER, CHARLES 1914 The nervus terminalis in adult man. *Jour. Comp. Neur.*, vol. 24, p. 131.
- HUBER, G. CARL, AND GUILD, S. R. 1913 Observations on the peripheral distribution of the nervus terminalis in mammals. *Anat. Rec.*, vol. 7, p. 253.
- JOHNSTON, J. B. 1913 The nervous terminalis in reptiles and mammals. *Jour. Comp. Neur.*, vol. 23, p. 97.
- 1914 The nervus terminalis in man and mammals. *Anat. Rec.*, vol. 8, p. 185.
- McCOTTER, R. E. 1912 The connection of the vomero-nasal nerves with the accessory olfactory bulb in the opossum and other mammals. *Anat. Rec.*, vol. 6, p. 299.