

MANAGEMENT OF SPONTANEOUS
INTRACRANIAL BRAIN HAEMORRHAGE
(SURGICAL TREATMENT VERSUS MEDICAL TREATMENT)

THESIS

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The Master Degree In General Surgery

BY

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Introduction
and
Aim of the Work

Introduction and Aim of the Work

Spontaneous intracranial brain haemorrhage includes Intracerebral, Intracerebellar, Subarachnoid & Intraventricular haemorrhage. Spontaneous means that trauma & exogenous factors play no role in its occurrence **(Jellinger, 1980)**. Haemorrhagic strokes represent 12% of all strokes. **(Kurtzke, 1976)**

There are many causes of spontaneous Intracerebral haematomas. Hypertension account for 57% of all the cases in autopsy series & 40% to 55% in clinical series **(Jellinger, 1980)**, Most common causes of subarachnoid haemorrhage are ruptured aneurysm or AVMs **(Bryann Jennett, 1983)**. The most common cause of ISO lated intraventricular haemorrhage is deep AVMs. **(Jenny et al., 1966)**

In management of patients having spontaneous intracranial brain haemorrhage, the aetiological diagnosis is as important as the pathological & anatomical diagnosis, & their importance is reflected on the treatment. The treatment of hypertensive haemorrhage is controversial **(McKissock et al., 1961; Heros, 1981; Ojemann 1983, and Thomas Ducker, 1985)** The treatment of haemorrhagic strokes with Aneurysm & AVMs is surgical. **(Symon, 1976; Stein and Wolpert, 1980)**

This study of 62 cases of spontaneous intracranial brain haemorrhage admitted to Neurosurgery Department in the last 2 years, (47 cases of spontaneous intracerebral & intracerebellar haemorrhage, 13 cases of subarachnoid haemorrhage & 2 cases of isolated intraventricular haemorrhage), as regard Management, which includes diagnosis & treatment with comparison between surgical & medical results.

CHAPTER 1

Anatomy

Renn & Rhoton 1975,
Perlmutter & Rhoton 1976,
Harris & Rhoton 1976, and
Saeki & Rhoton 1977.

Chapter 1

Anatomy

The Circulus Arteriosus of Willis:

Formation:

Anteriorly: two anterior cerebral arteries communicated together by anterior communicating artery.

Posteriorly: Two posterior cerebral arteries (from basilar artery), communicated with the internal carotid artery (on each side) by posterior communicating artery.

Table 1-1: Diameters, lengths, and number of perforators of branches of the circle of Willis.

Artery	Average Diameter (mm)	Average Length (mm)	Average Number of perforating branches
Internal carotid artery (above posterior communicating artery)	4.3	---	2.3
Anterior cerebral artery			
A-1 Segment	2.6	12.7	8.0
A-2 Segment (proximal 5mm)	---	---	1.2
Anterior communicating artery	1.5	2.6	1.6
Recurrent artery	1.0	---	4.2
Anterior choroidal artery	1.0	---	---
Posterior communicating artery	1.3	12.6	7.0
Posterior cerebral artery			
P-1 Segment	2.6	7.0	4.1
P-2 Segment	2.7	---	---
Basilar artery (upper 1cm)	4.1	32.0	8.0
Superior cerebellar artery (proximal 1cm)	1.9	---	4.0

Figure 1-1.A

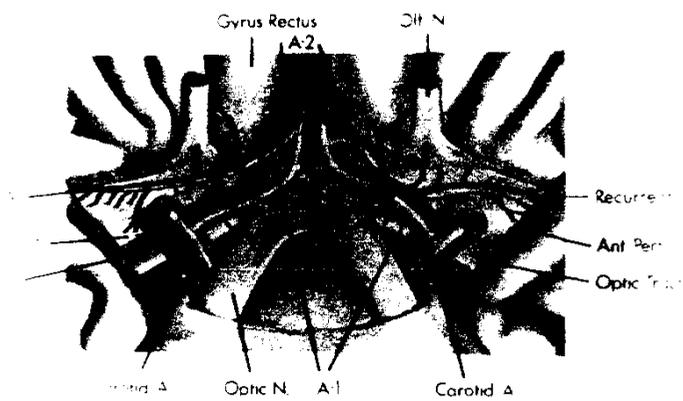


Figure 1-1.B

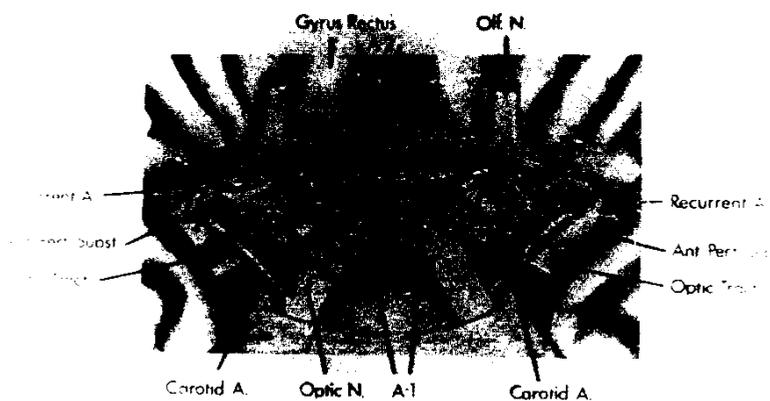


Figure 1-1.C

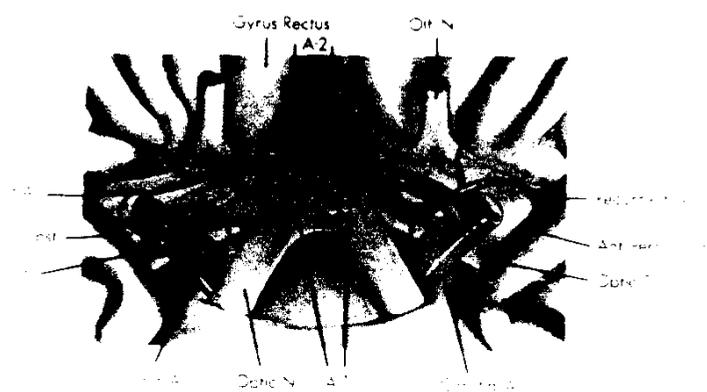
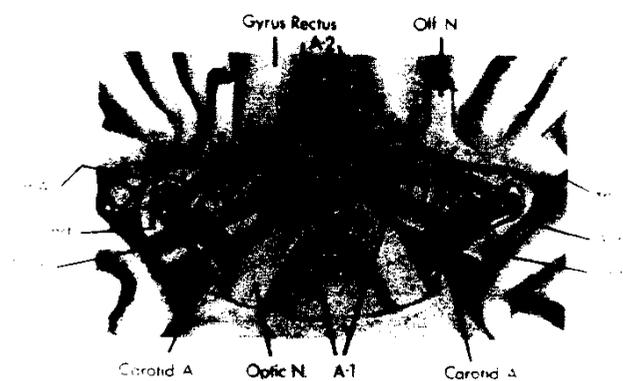


Figure 1-1.D



Anterior cerebral - Anterior communicating - Recurrent artery complex:

Anterior cerebral and Anterior communicating arteries:

Anterior cerebral artery begins as one of two terminal branches of the carotid artery. Each Anterior cerebral artery courses over the superior surface of the optic chiasm, or nerves to joins the anterior communicating artery, (Figure 1-1).

The junction of the anterior communicating artery with the right and left A-1 segments were above the chiasm (70%), rather in prefixed position over the nerves (30%), (Figure 1-2). Size of both arteries is in (table 1-1). Anterior cerebral arteries were side by side as they passing between the cerebral hemispheres in 18%, the left one was anterior to the right one in 48% and the right one was anterior to the left one in 34%, (Figure 1-4, 1-5)

Abnormalities of the anterior part of the circle of Willis:

- a. Stringlike or absent components (Figure 1-2).
- b. Hypoplasia of the A-1 segment.
- c. One anterior communicating artery was present in 60%, two in 30% and 3 in 10% of cases (Figure 1-1 and 1-4 to 1-8).
- d. Duplication of a portion of A-1 segment. (Figure 1-1 G and 1-9).
- e. A third or median anterior cerebral artery (arteria termatica of Wilden) (Figure 1-1 H and 1-10).

Recurrent artery of Heubner:

The artery was first described by Heubner in 1874 (Figure 1-1 and 1-3 to 1-11). The size is in table 1-1, and termination is in table 1-2. Origin of the recurrent artery:

1. A-2 segment (in 78% of cases) (Figure 1-1, 1-4, 1-6, 1-7, 1-10 and 1-11)

Figure 1-1.E

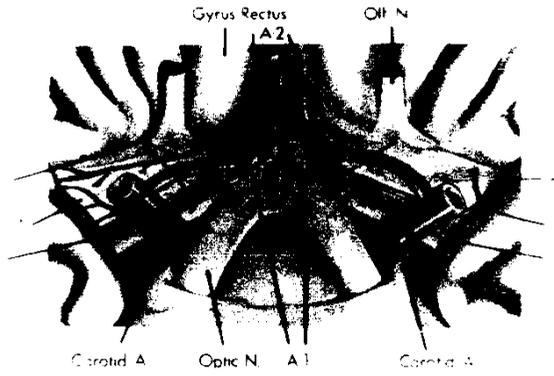


Figure 1-1.F

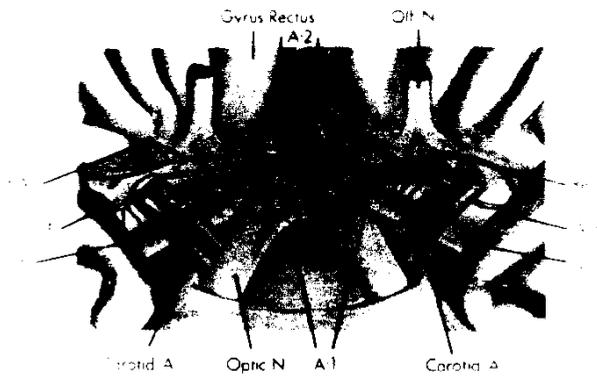


Figure 1-1.G

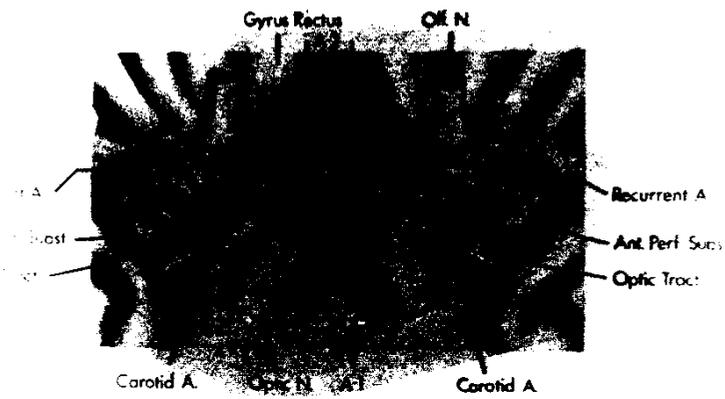
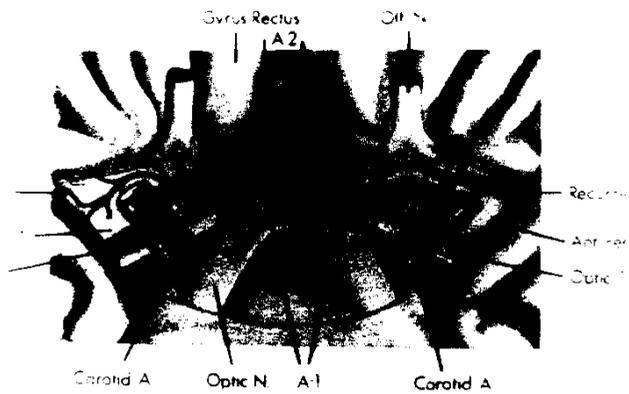


Figure 1-1.H



2. A-1 segment (in 14% of cases) (Figure 1-1, 1-3, 1-8 and 1-9).
3. Anterior communicating (in 8% of cases) (Figure 1-1 and 1-3).

It coursed anterior to the A-1 segment in 60% of cases and would have been seen on elevating the frontal lobe prior to visualization of the A-1 segment (Figure 1-8, 1-10 and 1-11). In 40% it coursed between A-1 and anterior perforated substance (Figure 1-1 and 1-3 to 1-6), and sometimes, it looped posterior to the A-1 segment (Figure 1-6 and 1-7).

It supplies the anterior part of caudate nucleus, anterior third of putamen, the tip of the outer surface of the globus pallidus and the anterior limb of the internal capsule.

Basal perforating branches:

The A-1 & A-2 segments and anterior communicating artery were the site of origin of small arterial branches to the anterior perforated substance, subfrontal area, dorsal surface of the optic chiasm, suprachiasmatic area, hypothalamus and sylvian fissure, (Figure 1-1, 1-4 & 1-11) and (tables 1-1 and 1-2).

Table 1-2: Termination of branches by percent of branches arising from each artery.

	Artery of origin (percentage)			
	A-1	A-2 (proximal 5mm)	Anterior communi- cating	Recurrent artery
Optic chiasm, tract and nerve, suprachiasmatic area.	42	12	72	0
Anterior perforated substance	41	15	15	39
Sylvian fissure	5	0	0	41
Frontal lobe	10	60	5	20
Other	2	13	8	0

Figure 1-1.I

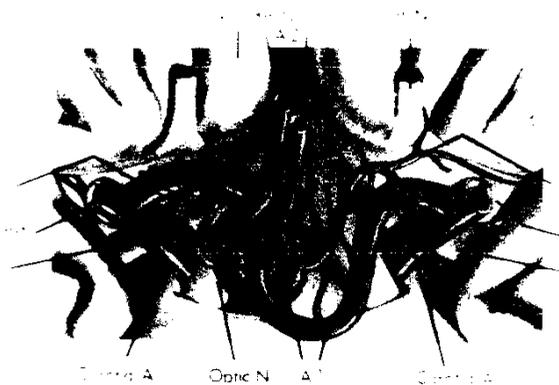


Figure 1-2.A



Figure 1-2.B

