

# **ROLE OF TRANSSPHEOIDAL APPROACH IN THE MANAGEMENT OF PITUITARY ADENOMAS WITH AND WITHOUT SUPRASELLAR EXTENSION**

**A Thesis**

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**Neurosurgery**

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## ***Aim of the work***

The aim of this study is to evaluate the role of the transsphenoidal surgery using the different techniques, microscopic and endoscopic, in the management of pituitary adenomas with sellar and with suprasellar extension. Also to compare between the classic microscopic and endoscopic transsphenoidal approach for treatment of pituitary adenomas, regarding the extent of the tumor removal, clinical improvement after surgery, development of complications, and the convenience related to both techniques.

# ***Contents***

|   |            |
|---|------------|
| <b>Introduction.....</b>  | <b>1</b>   |
| <b>Review of literature</b>   |            |
| • <b>History and development of transsphenoidal surgery.....</b>                        | <b>3</b>   |
| • <b>Relevant surgical anatomy of the transsphenoidal Approach and development.....</b> | <b>11</b>  |
| • <b>Physiology of the pituitary gland.....</b>   | <b>40</b>  |
| • <b>Pathology of pituitary adenomas.....</b>   | <b>45</b>  |
| • <b>Clinical and radiological evaluation of pituitary adenoma.....</b>                 | <b>63</b>  |
| • <b>Management strategies for treatment of pituitary adenomas.....</b>                 | <b>81</b>  |
| • <b>Transsphenoidal pituitary surgery.....</b>   | <b>89</b>  |
| <b>Patients and Methods.....</b>  | <b>117</b> |
| <b>Illustrative cases.....</b>  | <b>137</b> |
| <b>Results.....</b>   | <b>149</b> |
| <b>Discussion.....</b>  | <b>171</b> |
| <b>Summary and Conclusion.....</b>  | <b>194</b> |
| <b>References.....</b>  | <b>197</b> |
| <b>Arabic summary.....</b>  | <b>210</b> |

## *List of Charts*

| <b>No</b> | <b>Chart</b>  | <b>Page</b> |
|-----------|---|-------------|
| <b>1</b>  | The extent of tumor removal in the 2 different groups.  | <b>154</b>  |
| <b>2</b>  | The extent of tumor removal among the tumors with suprasellar extension only  | <b>155</b>  |
| <b>3</b>  | The extent of tumor removal among the tumors with suprasellar and parasellar extension  | <b>156</b>  |
| <b>4</b>  | The extent of resection in the sellar tumors, tumors with suprasellar extension only and tumors with suprasellar and parasellar extension | <b>159</b>  |
| <b>5</b>  | The overall clinical improvement between the two groups   | <b>160</b>  |
| <b>6</b>  | The degree of improvement among the nonfunctioning tumors in the two groups   | <b>161</b>  |
| <b>7</b>  | The improvement in visual symptoms between the two groups   | <b>163</b>  |
| <b>8</b>  | Hospital stay among both groups   | <b>164</b>  |
| <b>9</b>  | Use of nasal pack and fat graft among both groups:  | <b>165</b>  |
| <b>10</b> | The early complications related to surgery in the two groups.   | <b>167</b>  |
| <b>11</b> | The post operative follow up and further treatment elicited in both studied groups  | <b>169</b>  |

## *List of figures*

| <b>No.</b> | <b>Fig.</b>   | <b>Page</b> |
|------------|---|-------------|
| <b>1</b>   | Sagittal and axial multiplaner CT scan of an Egyptian mummy   | <b>3</b>    |
| <b>2</b>   | Photographs showing key personalities in the evolution of the transsphenoidal approach  | <b>10</b>   |
| <b>3</b>   | A) The ethmoid bone anatomy. B) Bottom view of the ethmoid bone   | <b>11</b>   |
| <b>4</b>   | Relations of the ethmoidal sinus to other sinuses. A) The ethmoid sinus from below. B) Saggital section through the ethmoidal sinus   | <b>12</b>   |
| <b>5</b>   | Anatomy of the nasal cavity. A) The Pyriform aperture. B) the chona   | <b>12</b>   |
| <b>6</b>   | A) The medial nasal wall or the nasal septum. B) The lateral nasal wall   | <b>13</b>   |
| <b>7</b>   | Anatomical landmarks of the Lateral nasal wall. A) Superior, middle and inferior turbinate in relation to the sphenoid sinus. B) The sphenopalatine foramen at the tail of the middle turbinate | <b>14</b>   |
| <b>8</b>   | Blood supply of the nasal cavity. A) The nasal septum. B) The lateral nasal wall  | <b>15</b>   |
| <b>9</b>   | Endoscopic anatomy of the nasal cavity. A) introducing the scope parralel to the nasal floor .B) the chona, the naso pharynex moving the scope a little bi up.                                  | <b>15</b>   |
| <b>10</b>  | A) The sphenoethmoidal recess. B) The sphenoid ostium in the SER medial to the superior turbinate   | <b>16</b>   |
| <b>11</b>  | Parts of the sphenoid bone. A) Posterior view. B) Anterior view   | <b>17</b>   |

|           |   |           |
|-----------|---|-----------|
| <b>12</b> | Types of sphenoid sinus   | <b>18</b> |
| <b>13</b> | Walls of the sphenoid sinus. A) Anterior wall in coronal section. B) Lateral walls in coronal section   | <b>19</b> |
| <b>14</b> | Prominences and recesses within the sphenoid sinus. A) SF=sellar floor,   | <b>20</b> |
| <b>15</b> | Sphenoid sinus endoscopic anatomy. A) Exposure of the anterior wall sphenoid sinus through the right nasal cavity. B) anterior sphenoidotomy.   | <b>22</b> |
| <b>16</b> | Endoscopic classification of the segments of the carotid prominence   | <b>23</b> |
| <b>17</b> | Superior and lateral views showing the diaphragm. <b>A</b> and <b>B</b> The diaphragma sellae is continuous anteriorly with the dura of the tuberculum sellae and the anterior cranial fossa, posteriorly with the dura of the dorsum sellae and clivus, and laterally with the dura of the roof and lateral wall of the cavernous sinus. | <b>24</b> |
| <b>18</b> | Superior surface of a gland   | <b>27</b> |
| <b>19</b> | The pituitary stalk can be divided into 3 parts according to their relationship with the arachnoid sleeve enveloping the pituitary stalk  | <b>28</b> |
| <b>20</b> | Cadaveric dissection showing the relationship between the basal arachnoid membrane and the pituitary stalk  | <b>28</b> |
| <b>21</b> | A) Relationship of the pituitary gland to the cavernous sinus and its contents. B) Relation to the cavernous carotid artery   | <b>30</b> |
| <b>22</b> | Sagittal sections of the sellar region showing variations in the intercavernous venous connections within the dura  | <b>32</b> |
| <b>23</b> | Sagittal sections (left) and superior views (right) of the sellar region showing the optic nerve and chiasm, and carotid artery   | <b>33</b> |
| <b>24</b> | Embryogenesis of the pituitary gland  | <b>35</b> |
| <b>25</b> | Remnants of the course of Rathke's pouch.   | <b>36</b> |



|           |  |           |
|-----------|--|-----------|
| <b>26</b> | Diagrammatic representation of the vascular anatomy of the pituitary gland   | <b>41</b> |
| <b>27</b> | The KNOSP classification diagrams and corresponding coronal MRI.   | <b>52</b> |
| <b>28</b> | Densely granulated growth hormone cell adenoma   | <b>56</b> |
| <b>29</b> | Sparsely granulated growth hormone cell adenoma  | <b>56</b> |
| <b>30</b> | Dynamic sellar MRI study for pituitary microadenoma. (A) Coronal dynamic postcontrast image obtained 20 seconds after injection of contrast material(B) 40 seconds after injection(C) 80 seconds after injection(D) Coronal postcontrast T1-weighted image | <b>66</b> |
| <b>31</b> | Macroadenoma. (A) Sagittal T1-weighted image.(B) Coronal postcontrast T1-weighted image .  | <b>67</b> |
| <b>32</b> | (A, B) Visual fields in a patient with a pituitary tumor. (C) T1-weighted coronal MRI scan .   | <b>69</b> |
| <b>33</b> | Patient positioning and surgical team.   | <b>92</b> |
| <b>34</b> | Standard sublabial transsphenoidal approach: incision and submucosal dissection  | <b>95</b> |
| <b>35</b> | Submucosal dissection. (A) The quadrangular cartilage can be mobilized from its attachment to the perpendicular plate of the ethmoid and the vomer. (B) Further posterosuperior dissection is performed toward the rostrum of the sphenoid sinus           | <b>95</b> |
| <b>36</b> | Resection of the sphenoid sinus by using the sphenoid ostia to gain access   | <b>96</b> |
| <b>37</b> | Dural opening.   | <b>96</b> |
| <b>38</b> | Tumor removal.   | <b>97</b> |

|           |   |            |
|-----------|---|------------|
| <b>39</b> | Endonasal transseptal approach (A and B, submucosal endonasal approach  | <b>98</b>  |
| <b>40</b> | Septal displacement approach, sagittal view of re-op incision behind septum   | <b>99</b>  |
| <b>41</b> | Right nostril approach, nasal phase of the procedure  | <b>104</b> |
| <b>42</b> | Right nostril approach, nasal phase of the procedure. a, exploration of the inferior part of the nasal cavity. b, view of the anatomic structures through the choana. c, exploration of the superior part of the nasal cavity | <b>104</b> |
| <b>43</b> | Sphenoid phase. a, detachment of the nasal septum from the sphenoid rostrum . b, exposure of the anterior wall of the sphenoid sinus.   | <b>105</b> |
| <b>44</b> | Right nostril approach, sphenoid phase of the procedure. a, enlargement of the anterior sphenoidotomy . b and c, exposure of the sphenoid cavity.   | <b>106</b> |
| <b>45</b> | Sellar phasee. a, opening of an intact sellar floor b, enlargement of the sellar opening .  | <b>107</b> |
| <b>46</b> | Resection of tumor. A, Dural incision. B, Subdural plane developed. C, Sequential removal of tumor. D, Reconstruction of sellar floor   | <b>110</b> |
| <b>47</b> | The endoscope tower and the lens cleaning device beside it  | <b>121</b> |
| <b>48</b> | The endoscope with the sheath connected to the lens cleaning device, the scope is attached to pneumatic scope holder  | <b>121</b> |
| <b>49</b> | Different length of the slender high speed drill  | <b>121</b> |
| <b>50</b> | The manual scope holder   | <b>122</b> |
| <b>51</b> | Endoscopic team placement   | <b>124</b> |

|           |  |            |
|-----------|--|------------|
| <b>52</b> | Coagulation of the mucosa of the anterior wall sphenoid sinus  | <b>124</b> |
| <b>53</b> | Endoscopic view, sellar pulge and clival indentation   | <b>124</b> |
| <b>54</b> | Endoscopic view, opening the anterior bony wall of the sell.   | <b>125</b> |
| <b>55</b> | Coagulation of the dura with a suction coagulator along the peripheral margin  | <b>125</b> |
| <b>56</b> | Opening of the dura mater with a blunt hook.   | <b>126</b> |
| <b>57</b> | Tumor removal with a ring curet and suction canulas from the medial wall of the cavernous sinus                                    | <b>126</b> |
| <b>58</b> | The thickened arachnoid membrane and the suprasellar portion of the tumor descend towards the sell at the end of the tumor removal | <b>127</b> |
| <b>59</b> | Sellar reconstruction with abdominal fat graft and the bone remained from the sella wall.  | <b>128</b> |
| <b>60</b> | Augmenting the sellar reconstruction with titanium mesh placed between the dura and the bone.                                      | <b>128</b> |
| <b>61</b> | Sublabial incision with subperiosteal dissection of the mucosa to expose the rostrum of the maxilla                                | <b>130</b> |
| <b>62</b> | Microscopic view after placing the sphenoid speculum exposing the sphenoid rostrum.  | <b>130</b> |
| <b>63</b> | Microscopic view, opening of the sellar floor and exposure of the sellar dura.   | <b>131</b> |
| <b>64</b> | Microscopic view, tumor removal has been conducted in systematic fashion   | <b>131</b> |
| <b>65</b> | Microscopic view through the sphenoid speculum   | <b>132</b> |

## *List of Tables*

| <b>No.</b> | <b>Table</b>  | <b>Page</b> |
|------------|---|-------------|
| <b>1</b>   | Neuroanatomical classification of pituitary adenomas  | <b>47</b>   |
| <b>2</b>   | Clinicopathological classification of pituitary adenomas  | <b>48</b>   |
| <b>3</b>   | WHO Classification of pituitary tumors, 2004 (WHO)  | <b>50</b>   |
| <b>4</b>   | Differential diagnosis of sellar masses   | <b>80</b>   |
| <b>5</b>   | Study demographics among both groups  | <b>150</b>  |
| <b>6</b>   | Clinical types of pituitary adenomas among the 2 groups   | <b>151</b>  |
| <b>7</b>   | Size and extension of pituitary adenomas among the two groups.  | <b>151</b>  |
| <b>8</b>   | Previous pituitary surgeries among both groups  | <b>152</b>  |
| <b>9</b>   | Clinical presentations among both groups  | <b>153</b>  |
| <b>10</b>  | The extent of tumor removal in the 2 different groups   | <b>153</b>  |
| <b>11</b>  | The extent of tumor removal among the tumors with suprasellar extension only:   | <b>154</b>  |
| <b>12</b>  | The extent of tumor removal among the tumors with suprasellar and parasellar extension  | <b>155</b>  |
| <b>13</b>  | The extent of resection in the sellar tumors, tumors with suprasellar extension only and tumors with suprasellar and parasellar extension | <b>157</b>  |
| <b>14</b>  | The extent of resection in the sellar tumors and tumors with suprasellar extension only   | <b>157</b>  |

|           |  |            |
|-----------|--|------------|
| <b>15</b> | The extent of resection in the sellar tumors and tumors with suprasellar and parasellar extension                          | <b>158</b> |
| <b>16</b> | The extent of resection in the tumors with suprasellar extension only and tumors with suprasellar and parasellar extension | <b>158</b> |
| <b>17</b> | The overall clinical improvement between the 2 groups  | <b>159</b> |
| <b>18</b> | The degree of clinical improvement among the nonfunctioning tumors between the 2 groups                                    | <b>160</b> |
| <b>19</b> | The improvement among the functioning tumors between the 2 groups  | <b>161</b> |
| <b>20</b> | The improvement in visual symptoms between the two groups  | <b>162</b> |
| <b>21</b> | The convenience related to surgery between both groups   | <b>163</b> |
| <b>22</b> | Student t test to compare the hospital stay in the 2 groups.   | <b>164</b> |
| <b>23</b> | Z-test for comparison between 2 proportions  | <b>164</b> |
| <b>24</b> | Z-test for comparison between 2 proportions  | <b>165</b> |
| <b>25</b> | The early complications related to surgery between the two groups  | <b>166</b> |
| <b>26</b> | The late complications related to surgery between the two groups   | <b>167</b> |
| <b>27</b> | Z-test for comparison between 2 proportions  | <b>168</b> |
| <b>28</b> | The post operative follow up and further treatment elicited in both studied groups   | <b>168</b> |
| <b>29</b> | Z-test for comparison between 2 proportions  | <b>170</b> |

# *Introduction*

Since transsphenoidal approaches were developed in the early 1900s, the basic surgical techniques have not changed much in transsphenoidal pituitary surgery besides adoption of the operating microscope in the 1960s by Hardy.

A transseptal approach via submucosal dissection along the nasal septum via a sublabial or transfixional incision guides a surgeon to the sphenoidal sinus. Through a narrow surgical tunnel created with a transsphenoidal speculum retractor placed through a transseptal route, surgical removal of the pituitary tumor is carried out under the operating microscope. After tumor removal, the nasal cavity has to be packed in order to approximate the dissected nasal mucosa together.

Pituitary microsurgeons have demonstrated good surgical outcomes and low risks associated with microscopic transsphenoidal pituitary surgery for years. Thus, the microscopic transsphenoidal pituitary surgery has been a gold standard surgical method when patients with pituitary adenomas require surgical treatment. Nevertheless, this relatively benign transsphenoidal surgery can still be improved further as rhinologic sinus operations have changed in time.

With an advance in endoscopic optics and video-images, an endoscope enables the surgeon to examine the nasal cavity as well as to perform surgical procedures without conventional skin incisions. This endoscopic surgical concept in sinus surgery has been adopted in transsphenoidal pituitary surgery.

Contrary to narrow microscopic views, endoscopic views are panoramic. In addition, an endoscope enables a surgeon to inspect the tumor resection cavity directly by the direct placement of an endoscope into the sella, to inspect the suprasellar region directly with application

of angled lens endoscopes, and to approach the skull base at the anterior cranial fossa and clivus readily.

With an addition of endoscopy to the relatively benign nature of transsphenoidal surgery, endoscopic endonasal pituitary surgery has provided minimal postoperative discomfort, short hospital stay and quick postoperative recovery.

In this work we will discuss in details the classic microscopic and endoscopic transsphenoidal approaches with main focus on: The history and development of the transsphenoidal surgery with emphasis on the effect of technology on improving this minimally invasive surgery.

Also we will review the relevant microscopic and endoscopic anatomy related to the approach, the physiology of the adenohypophysis and neurohypophysis, the pathology of pituitary adenomas, the evaluation and management of pituitary adenomas and the perioperative management of patients with pituitary adenomas undergoing pituitary surgery.

The different techniques of performing microscopic and endoscopic transsphenoidal pituitary surgery will be discussed in full details.

We will study the results of transsphenoidal pituitary surgery on tumors with sellar and suprasellar extension as well as the tumors with parasellar extension using the different techniques.

Then we will compare between the classic microscopic and endoscopic transsphenoidal approach for treatment of pituitary adenomas, regarding the extent of the tumor removal, clinical improvement after surgery, development of complications, the follow up and the further treatment needed, and the convenience related to both techniques.

All the patients will be evaluated before surgery by clinical examination, hormonal assay, visual assessment and radiological investigations. Then all of them will be reassessed again using the same preoperative parameters after surgery in a follow up period will be determined accordingly.