Peertechz®

CLINICAL GROUP

JOURNAL OF
Surgery and Surgical Research

ISSN: 2455-2968 DOI: https://dx.doi.org/10.17352/jssr

Review Article

Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease

Omer Sager*, Murat Beyzadeoglu, Ferrat Dincoglan, Selcuk Demiral, Bora Uysal, Hakan Gamsiz, Fatih Ozcan, Onurhan Colak and Bahar Dirican

Department of Radiation Oncology; University of Health Sciences, Gulhane Medical Faculty, Ankara, Turkey

Received: 09 June, 2020
Accepted: 30 June, 2020
Published: 01 July, 2020

***Corresponding author:** Dr. Omer Sager, MD, Department of Radiation Oncology; University of Health Sciences, Gulhane Medical Faculty, Gn.Tevfik Saglam Cad. 06018, Etlik, Kecioren, Ankara, Turkey, Tel: + 90505 0769465; 90312 3044683; Fax: +90 312 304 4680; E-mail: omersager@gmail.com; dromersager@gmail.com

Keywords: Obsessive compulsive disorder; Radiosurgery; Gamma Knife Radiosurgery (GKRS)

https://www.peertechz.com

Abstract

Obsessive Compulsive Disorder (OCD) is a mental health disorder with characteristic features including uncontrollable, reoccurring thoughts referred to as obsessions, and excessive urges to perform repeated certain routines referred to as compulsions. Affected patients may suffer from tics, anxiety, negative social behaviours and self mutilation. Symptoms of patients may be intrusive, anxiety-provoking, and rather distressing which may significantly compromise both social and occupational functioning. Deterioration in quality of life may occur as a consequence of unemployment, marriage failure, and maladjustment in familial relationships. Initial management of OCD may include exposure and response prevention, cognitive-bahavioural-therapy, and pharmacological agents such as selective serotonin reuptake inhibitors and tricyclic antidepressants. These management strategies may be effective for the majority of patients suffering from OCD. However, approximately 20% of patients have refractory OCD unresponsive to first-line therapies and a subgroup of patients unresponsive to first-line therapies suffer from severe debilitating symptoms referred to as intractable OCD. Radiosurgery has a long history as an excellent radiotherapeutic modality for management of several intracranial disorders. Radiosurgical or gamma capsulotomy technique involving discrete, circumscribed lesions in white matter of the anterior limb of the internal capsule has been introduced by the Swedish neurosurgeon Lars Leksell. Gammaknife Radiosurgery (GKRS) system has been used as a viable alternative to open surgical anterior capsulotomy procedures and gained popularity and widespread acceptance with accumulating evidence from several centers worldwide. Herein, we provide a concise review including the definition, epidemiology and symptomotology of OCD, patient selection criteria, and management options with focus on radiosurgery.

Introduction

Obsessive Compulsive Disorder (OCD) is among the most important psychiatric disorders significantly deteriorating the mental health of affected patients along with severe consequences such as unemployment, marriage failure, and maladjustment in familial relationships. Patients suffer from substantial impairment in their quality of life. Available first-line therapeutic strategies including exposure and response prevention, cognitive-bahavioural-therapy, and pharmacological agents such as selective serotonin reuptake inhibitors and tricyclic antidepressants may result in clinical improvement in majority of patients, however, approximately 20% of patients have refractory OCD unresponsive to first-line management, and a subgroup of patients unresponsive to first-line therapies suffer from severe debilitating symptoms referred to as intractable OCD. No consensus exists for management of patients with intractable OCD and treatment decisions

Citation: Sager O, Beyzadeoglu M, Dincoglan F, Demiral S, Uysal B, et al. (2020) Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease. J Surg Surgical Res 6(2): 100-105.DOI: https://dx.doi.org/10.17352/2455-2968.000106

are typically based on retrospective data and institutional experiences. As a viable alternative to open surgical anterior capsulotomy procedures, radiosurgery has been introduced with the pertinent goal of generating relatively smaller and probably safer lesions without the need for craniotomy, and has gained popularity and widespread acceptance around the globe. Herein, we provide a concise review including the definition, epidemiology and symptomotology of OCD, patient selection criteria, and management options with focus on radiosurgery. This article has been intended to provide an overview of OCD, and eminent articles on radiosurgery for OCD have been reviewed.

Definition of OCD, epidemiology, and symptomatology

OCD is a mental health disorder with characteristic features including uncontrollable, reoccurring thoughts referred to as obsessions, and excessive urges to perform repeated certain routines referred to as compulsions. Affected patients may suffer from tics, anxiety, negative social behaviours and self mutilation. Worlwide prevalance for OCD ranges between 1.2% and 3.9% [1-6]. While symptoms of OCD may be manifested at any age, typical symptomatology is generally exhibited about the age of 30 years [6]. Symptoms of patients may be intrusive, anxiety-provoking, and rather distressing which may significantly compromise both social and occupational functioning. Hospitalization may be required for some afflicted patients. Deterioration in quality of life may occur as a consequence of unemployment, marriage failure, and maladjustment in familial relationships [7,8].

Initial management of OCD

Initial management of OCD may include exposure and response prevention, cognitive-bahavioural-therapy, and pharmacological agents such as selective serotonin reuptake inhibitors and tricyclic antidepressants [9-17]. These management strategies may be effective for the majority of patients suffering from OCD [17]. However, approximately 20% of patients have refractory OCD unresponsive to first-line therapies [16-21] and a subgroup of patients unresponsive to first-line therapies suffer from severe debilitating symptoms referred to as intractable OCD [20-23]. There is no standard management for intractable OCD. In this context, psychosurgery may be considered for this selected subgroup of patients.

Definition of psychosurgery

Neurosurgical management of mental disorders with psychosurgery refers to destruction of histologically normal brain tissue in order to achieve symptomatic relief for afflicted patients suffering from debilitating and intractable psychiatric disorders who have exhausted other therapeutic options [23,24]. Cingulotomy, subcaudate tractotomy, limbic leucotomy, capsulotomy, magnetic resonance-guided focused ultrasound, and neurostimulatory interventions such as deep brain stimulation and transcranial magnetic stimulation are among the utilized procedures [20,23-40]. Nevertheless, thorough consideration of the ethical aspect is a critical issue for implementation of these procedures with some controversies and potential restrictions in different regions around the globe [41-46].

Radiosurgery as part of psychosurgery

Radiosurgery in the form of Stereotactic Radiosurgery (SRS), Stereotactic Ablative Body Radiotherapy (SABR) and Hypofractionated Stereotactic Radiation Therapy (HFSRT) may be judiciously utilized for focused radiotherapeutic management of several CNS disorders and several other tumors throughout the human body [47-67]. Rationale of radiosurgery is delivery of high and ablative doses to well defined targets while sparing surrounding normal tissues. In the context of intractable OCD management, radiosurgical or gamma capsulotomy technique involving discrete, circumscribed lesions in white matter of the anterior limb of the internal capsule has been introduced by the Swedish neurosurgeon Lars Leksell [23,24,68-70]. Patient selection for radiosurgical management of OCD is a critical issue. Decision to treat patients with OCD using radiosurgery should be made after thorough multidisciplinary collaboration and consensus of experts from several disciplines including psychiatry, neuropsychology and neuropsychiatry, radiation oncology, neurology, and neurosurgery. A strict guideline for patient eligibility includes several qualifications including the following criteria [24,70]:

- Patients meeting the diagnostic criteria for OCD
- Duration of OCD for more than 5 years
- Profound suffering from OCD as scored on the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) of at least 26
- Disease severity causing significant reduction in the patient's psychosocial functioning, as revealed by a score of 50 or lower on the Global Assessment of Functioning (GAF) scale
- Failure to yield appreciable benefit from pharmacologic and behaviour therapies employed systematically alone or in combination for a duration of at least 5 years
- Management of any accompanying comorbid psychiatric condition (if present) with proper trials of first-line therapies
- Prognosis being considered grim without incorporation of neurosurgical intervention
- Patient's informed consent
- Patient's compliance with participation in preoperative assessment and postoperative rehabilitation programs
- Referring physician's willingness for postprocedural long-term patient management.

Management of intractable OCD with radiosurgery

Radiosurgery has a long history as an excellent radiotherapeutic modality for management of several intracranial disorders [68,71]. Gammaknife Radiosurgery (GKRS) system has been introduced as a viable alternative to open surgical anterior capsulotomy procedures with the

Citation: Sager O, Beyzadeoglu M, Dincoglan F, Demiral S, Uysal B, et al. (2020) Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease. J Surg Surgical Res 6(2): 100-105.DOI: https://dx.doi.org/10.17352/2455-2968.000106

pertinent goal of generating relatively smaller and probably safer lesions without the need for craniotomy, and has gained popularity and widespread acceptance supported by accumulating evidence from several centers worldwide [20,70,72-98]. A consistent finding of the relevant literature is that radiosurgery may serve as a viable alternative therapeutic option for intractable OCD management despite the need for futher supporting evidence with data on long-term safety and efficacy. An international, multicenter, retrospective cohort study on gamma ventral capsulotomy (GVC) for severe, medically refractory OCD reported that GVC may serve as a reasonable therapeutic approach for management of selected patients with OCD [75]. Another study assessing GVC for intractable OCD revealed that 31 out of the total 55 patients had improvement, and the authors concluded that GVC could be utilized as an effective radiosurgical procedure for many treatment refractory OCD patients [76]. Kondziolka, et al. evaluated the treatment results of bilateral radiosurgical anterior capsulotomy for severe medically refractory OCD [82]. There was no morbidity after GKRS with all patients returning immediately to baseline function, and the authors concluded that GKRS provided improvement of OCD behavior with no adverse effects [82]. A pilot study by Taub, et al. revealed that GVC did not result in profound cognitive deficits, and improvements have been observed in some cognitive domains [83]. Vigilance is required in meticulous selection of eligible patients for this highly sophisticated treatment procedure given several aspects of management including ethical issues and untowards adverse effects [99,100].

Conclusion and future perspectives

There is growing body of evidence suggesting the utility of radiosurgery for OCD management. Critical aspects of treatment include meticulous selection of eligible patients for this highly sophisticated therapy procedure, ethical considerations, and incorporation of relevant long-term safety and efficacy data to justify radiosurgical management. Decision to treat patients with OCD using radiosurgery should be made after thorough multidisciplinary collaboration and consensus of experts from several disciplines including psychiatry, neuropsychology and neuropsychiatry, radiation oncology, neurology, and neurosurgery. Future studies may be required for refining and optimization of the radiosurgical technique in terms of delivered doses and precise targeting for an improved therapeutic ratio.

References

1. Santana GL, Coelho BM, Wang YP, Porto AD, Filho C, et al. (2018) The epidemiology of personality disorders in the Sao Paulo Megacity general population. PLoS One 13: e0195581. Link: https://bit.ly/2YH5eX4
2. Andrade LH, Wang YP, Andreoni S, Silveira CM, Alexandrino-Silva C, et al. (2012) Mental disorders in megacities: findings from the São Paulo megacity mental health survey, Brazil. PLoS One 7: e31879. Link: https://bit.ly/38fjHMR
3. Subramaniam M, Abdin E, Vaingankar JA, Ann Chong S, et al. (2012) Obsessive--compulsive disorder: prevalence, correlates, help-seeking and quality of life in a multiracial Asian population. Soc Psychiatry Psychiatr Epidemiol 47: 2035-2043. Link: https://bit.ly/2ZngbMp
4. Ruscio AM, Stein DJ, Chiu WT, Kessler RC (2010) The epidemiology of obsessive-compulsive disorder in the National Comorbidity Survey Replication. Mol Psychiatry 15: 53-63. Link: https://bit.ly/2ZlLyqP
5. Kessler RC, Chiu WT, Demler O, Walters EE (2005) Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry 62: 617-627. Link: https://bit.ly/3dMqOO0
6. Sasson Y, Zohar J, Chopra M, Lustig M, Iancu I, et al. (1997) Epidemiology of obsessive-compulsive disorder: a world view. J Clin Psychiatry 12: 7-10. Link: https://bit.ly/3eOuKzo
7. Coluccia A, Ferretti F, Fagiolini A, Pozza A (2017) Quality of life in children and adolescents with obsessive-compulsive disorder: a systematic review and meta-analysis. Neuropsychiatr Dis Treat 13: 597-608. Link: https://bit.ly/2NMwsFf
8. Subramaniam M, Soh P, Vaingankar JA, Picco L, Chong SA. (2013) Quality of life in obsessive-compulsive disorder: impact of the disorder and of treatment. CNS Drugs 27: 367-383. Link: https://bit.ly/38dN4PL
9. Greist JH, Jefferson JW, Kobak KA, Katzelnick DJ, Serlin RC (1995) Efficacy and tolerability of serotonin transport inhibitors in obsessive compulsive disorder: A meta-analysis. Arch Gen Psychiatry 52: 53–60. Link: https://bit.ly/31wO402
10. Abramowitz JS (1998) Does cognitive-behavioral therapy cure obsessive-compulsive disorder? A meta-analytic evaluation of clinical significance. Behav Ther 29: 329-335.
11. Goodman WK, McDougle CJ, Barr LC, et al. (1993) Biological approaches to treatment-resistant obsessive compulsive disorder. J Clin Psychiatry 54 : 16-26.
12. Skapinakis P, Caldwell DM, Hollingworth W, Bryden P, Fineberg NA, et al. (2016) Pharmacological and psychotherapeutic interventions for management of obsessive-compulsive disorder in adults: a systematic review and network metaanalysis. Lancet Psychiatry 3: 730-739. Link: https://bit.ly/2YJgF0e
13. Fineberg NA, Reghunandanan S, Simpson HB, Phillips KA, Richter MA, et al. (2015) Obsessive–compulsive disorder (OCD): practical strategies for pharmacological and somatic treatment in adults. Psychiatry Res 227: 114-125. Link: https://bit.ly/38f82hq
14. Fineberg NA, Reghunandanan S, Brown A, Pampaloni I (2013) Pharmacotherapy of obsessive-compulsive disorder: evidence-based treatment and beyond. Aust N Z J Psychiatry 47: 121-141. Link: https://bit.ly/2AfVIWZ
15. Eddy KT, Dutra L, Bradley R, Westen D (2004) A multidimensional meta-analysis of psychotherapy and pharmacotherapy for obsessive-compulsive disorder. Clin Psychol Rev 24: 1011-1030. Link: https://bit.ly/38dGbOo
16. McKay D, Sookman D, Neziroglu F, Wilhelm S, Stein DJ, et al. (2015) Efficacy of cognitive-behavioral therapy for obsessive–compulsive disorder. Psychiatry Res 225: 236-246. Link: https://bit.ly/2AkP1gY
17. Hirschtritt ME, Bloch MH, Mathews CA (2017) Obsessive-compulsive disorder: advances in diagnosis and treatment. JAMA 317: 1358-1367. Link: https://bit.ly/2ZkB5MI
18. Jakubovski E, Diniz JB, Valerio C, Fossaluza V, Belotto-Silva C, et al. (2013) Clinical predictors of long-term outcome in obsessive-compulsive disorder. Depress Anxiety 30: 763-772. Link: https://bit.ly/2CKXhaH
19. Husted DS, Shapira NA (2004) A review of the treatment for refractory obsessive-compulsive disorder: from medicine to deep brain stimulation. CNS Spectr 9: 833-847. Link: https://bit.ly/3eM9WbI
20. Miguel EC, Lopes AC, McLaughlin NCR, Norén G, Gentil AF, et al. (2019) Evolution of gammaknife capsulotomy for intractable obsessive-compulsive disorder. Mol Psychiatry 24: 218-240. Link: https://bit.ly/3dMtNWI

Citation: Sager O, Beyzadeoglu M, Dincoglan F, Demiral S, Uysal B, et al. (2020) Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease. J Surg Surgical Res 6(2): 100-105.DOI: https://dx.doi.org/10.17352/2455-2968.000106

21. Garnaat SL, Greenberg BD, Sibrava NJ, Goodman Wk, Mancebo MC, et al. (2014) Who qualifies for deep brain stimulation for OCD? Data from a naturalistic clinical sample. J Neuropsychiatry Clin Neurosci 26: 81-86. Link: https://bit.ly/3g4YNTs

22. Greenberg BD, Murphy DL, Rasmussen SA (2000) Neuroanatomically based approaches to obsessive-compulsive disorder. Neurosurgery and transcranial magnetic stimulation. Psychiatr Clin North Am 23: 671-686. Link: https://bit.ly/38bXMGB

23. Jenike MA, Rauch SL (1994) Managing the patient with treatment resistant obsessive compulsive disorder: Current strategies. J Clin Psychiatry 55: 11-17. Link: https://bit.ly/2YKGAoA

24. Mindus, Jenike MA (1992) Neurosurgical treatment of malignant obsessive compulsive disorder. Psychiatr Clin North Am 15: 921-938. Link: https://bit.ly/2NHrk5n

25. Vicheva P, Butler M, Shotbolt P (2020) Deep brain stimulation for obsessive-compulsive disorder: A systematic review of randomised controlled trials. Neurosci Biobehav Rev 109: 129-138. Link: https://bit.ly/2CTIoDc

26. Senova S, Clair AH, Palfi S, Yelnik J, Domench P, et al. (2019) Deep Brain Stimulation for Refractory Obsessive-Compulsive Disorder: Towards an Individualized Approach. Front Psychiatry 10: 905. Link: https://bit.ly/2NFF1lx

27. Lozano AM, Lipsman N, Bergman H, Brown P, Chabardes S, et al. (2019) Deep brain stimulation: current challenges and future directions. Nat Rev Neurol 15: 148-160. Link: https://go.nature.com/3eMsZ5s

28. Lusicic A, Schruers KR, Pallanti S, Castle DJ (2018) Transcranial magnetic stimulation in the treatment of obsessive-compulsive disorder: current perspectives. Neuropsychiatr Dis Treat 14: 1721-1736. Link: https://bit.ly/2YJJUQD

29. Cabrera LY, Bittlinger M, Lou H, Müller S, Illes J (2018) The re-emergence of psychiatric neurosurgery: insights from a cross-national study of newspaper and magazine coverage. Acta Neurochir (Wien) 160: 625-635. Link: https://bit.ly/2BpHZYB

30. Meng Y, Suppiah S, Mithani K, Solomon B, Schwartz ML, et al. (2017) Current and emerging brain applications of MR-guided focused ultrasound. J Ther Ultrasound 5: 26. Link: https://bit.ly/3eXQTLL

31. Mendelsohn D, Lipsman N, Lozano AM, Taira T, Bernstein M (2013) The contemporary practice of psychiatric surgery: results from a global survey of functional neurosurgeons. Stereotact Funct Neurosurg 91: 306-313. Link: https://bit.ly/38aLmPe

32. Lipsman N, Mendelsohn D, Taira T, Bernstein M (2011) The contemporary practice of psychiatric surgery: results from a survey of North American functional neurosurgeons. Stereotact Funct Neurosurg 89: 103-110. Link: https://bit.ly/2BQ4UMM

33. Mendelsohn D, Lipsman N, Bernstein M (2010) Neurosurgeons' perspectives on psychosurgery and neuroenhancement: a qualitative study at one center. J Neurosurg 113: 1212-1218. Link: https://bit.ly/2BQQg7Q

34. Hooper AK, Okun MS, Foote KD, Fernandez HH, Jacobson C, et al. (2008) Clinical cases where lesion therapy was chosen over deep brain stimulation. Stereotact Funct Neurosurg 86: 147-152. Link: https://bit.ly/38eiQfJ

35. Kelly D, Richardson A, Mitchell-Heggs N (1973) Stereotactic limbic leucotomy. Neurophysiological Aspects and Operative Technique Br J Psychiatry 123: 133-140. Link: https://bit.ly/3ih1RxB

36. Kelly D, Richardson A, Mitchell-Heggs N (1973) Stereotactic limbic leucotomy. Neurophysiological Aspects and Operative Technique Br J Psychiatry 123: 133-140. Link: https://bit.ly/3ih1RxB

37. Ballantine HT, Cassidy WL, Flanagan NB, Marino R (1967) Stereotaxic anterior cingulotomy for neuropsychiatric illness and intractable pain. J Neurosurg 26: 488-495. Link: https://bit.ly/2Zq4xAJ

38. Knight G (1965) Stereotactic tractotomy in the surgical treatment of mental illness. J Neurol Neurosurg Psychiatry 28: 304-310. Link: https://bit.ly/2BdyY56

39. Foltz EL, White LE (1962) Pain "relief" by frontal cingulumotomy. J Neurosurg 19: 89-100. Link: https://bit.ly/2ZqC51k

40. Whitty CWM, Duffield JE, Tov PM, Cairns H (1952) Anterior cingulectomy in the treatment of mental disease. Lancet 1: 475-481. Link: https://bit.ly/2YLdXrq

41. Zajicek B (2017) Banning the Soviet Lobotomy: Psychiatry, Ethics, and Professional Politics during Late Stalinism. Bull Hist Med 91: 33-61. Link: https://bit.ly/2ZqwyrC

42. Kuhn J, Gaebel W, Klosterkoetter J, Woopen C (2009) Deep brain stimulation as a new therapeutic approach in therapy-resistant mental disorders: ethical aspects of investigational treatment. Eur Arch Psychiatry Clin Neurosci 259: S135-S141. Link: https://bit.ly/2Zm0WDt

43. Fuchs T (2006) Ethical issues in neuroscience. Curr Opin Psychiatry 19: 600-607. Link: https://bit.ly/2Zf53Ba

44. Ramamurthi B (1988) Ethics of functional neurosurgery. Acta Neurochir Suppl (Wien) 44: 179-180. Link: https://bit.ly/2VtoZiE

45. Clayton EW (1987) From Rogers to Rivers: the rights of the mentally ill to refuse medication. Am J Law Med 13: 7-52. Link: https://bit.ly/2YJPMcD

46. Carroll D, O'Callaghan MA (1984) Regulating, psychosurgery: ethical, social and scientific considerations. Med Law 3: 193-203. Link: https://bit.ly/2YHrwYC

47. Sirin S, Oysul K, Surenkok S, Sager S, Dincoglan F, et al. (2011) Linear accelerator-based stereotactic radiosurgery in recurrent glioblastoma: A single center experience. Vojnosanit Pregl 68: 961-966. Link: https://bit.ly/3ijlZ2u

48. Dincoglan F, Beyzadeoglu M, Sager O, Oysul K Sirin S, et al. (2012) Image-guided positioning in intracranial non-invasive stereotactic radiosurgery for the treatment of brain metastasis. Tumori 98: 630-635. Link: https://bit.ly/31tJYWz

49. Dincoglan F, Sager O, Gamsiz H, Demiral S, Uysal B, et al. (2012) Management of arteriovenous malformations by stereotactic radiosurgery: A single center experience. UHOD-Uluslararasi Hematoloji-Onkoloji Dergisi 22: 107-112. Link: https://bit.ly/3gaqDO9

50. Dincoglan F, Sager O, Gamsiz H, Uysal B (2012) Stereotactic radiosurgery for intracranial tumors: A single center experience. Gulhane Med J 54: 190-198. Link: https://bit.ly/2BdyU5m

51. Surenkok S, Sager O, Dincoglan F, Gamsiz H, Demiral S, et al. (2012) Stereotactic radiosurgery in pituitary adenomas: A single center experience. UHOD-Uluslararasi Hematoloji-Onkoloji Dergisi 22: 255-260. Link: https://bit.ly/2VvXNQo

52. Sager O, Beyzadeoglu M, Dincoglan F, Demiral S, Uysal B, et al. (2013) Management of vestibular schwannomas with linear accelerator-based stereotactic radiosurgery: A single center experience. Tumori 99: 617-622. Link: https://bit.ly/3eMg8R0

53. Dincoglan F, Beyzadeoglu M, Sager O, Uysal B, Demiral S, et al. (2013) Evaluation of linear accelerator-based stereotactic radiosurgery in the management of meningiomas: A single center experience. J BUON 18: 717-722. Link: https://bit.ly/3eLB4r3

54. Demiral S, Beyzadeoglu M, Uysal B, Oysul K, Elcim Kahya Y, et al. (2013) Evaluation of stereotactic body radiotherapy (SBRT) boost in the management of endometrial cancer. Neoplasma 60: 322-327. Link: https://bit.ly/3eMyCRp

55. Sager O, Beyzadeoglu M, Dincoglan F, Uysal B, Gamsiz H, et al. (2014) Evaluation of linear accelerator (LINAC)-based stereotactic radiosurgery (SRS) for cerebral cavernous malformations: A 15-year single-center experience. Ann Saudi Med 34: 54-58. Link: https://bit.ly/2Vvnv7z

Citation: Sager O, Beyzadeoglu M, Dincoglan F, Demiral S, Uysal B, et al. (2020) Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease. J Surg Surgical Res 6(2): 100-105.DOI: https://dx.doi.org/10.17352/2455-2968.000106

56. Sager O, Beyzadeoglu M, Dincoglan F, Gamsiz H, Demiral S, et al. (2014) Evaluation of linear accelerator-based stereotactic radiosurgery in the management of glomus jugulare tumors. Tumori 100: 184-188. Link: https://bit.ly/38c4z33

57. Sager O, Dincoglan F, Beyzadeoglu M (2015) Stereotactic radiosurgery of glomus jugulare tumors: Current concepts, recent advances and future perspectives. CNS Oncol 4: 105-114. Link: https://bit.ly/3dJVDmK

58. Gamsiz H, Beyzadeoglu M, Sager O, Dincoglan F, Demiral S, et al. (2014) Management of pulmonary oligometastases by stereotactic body radiotherapy. Tumori 100: 179-183. Link: https://bit.ly/31qBkYV

59. Dincoglan F, Sager O, Gamsiz H, Uysal B, Demiral S, et al. (2014) Management of patients with ≥ 4 brain metastases using stereotactic radiosurgery boost after whole brain irradiation. Tumori 100: 302-306. Link: https://bit.ly/2ZlWDbp

60. Demiral S, Beyzadeoglu M, Sager O, Dincoglan F, Gamsiz H, et al. (2014) Evaluation of linear accelerator (linac)-based stereotactic radiosurgery (srs) for the treatment of craniopharyngiomas. UHOD - Uluslararasi Hematoloji-Onkoloji Dergisi 24: 123-129. Link: https://bit.ly/3g6fOfW

61. Gamsiz H, Beyzadeoglu M, Sager O, Demiral S, Dincoglan F, et al. (2015) Evaluation of stereotactic body radiation therapy in the management of adrenal metastases from non-small cell lung cancer. Tumori 101: 98-103. Link: https://bit.ly/2Zqwfgs

62. Dincoglan F, Beyzadeoglu M, Sager O, Demiral S, Gamsiz H, et al. (2015) Management of patients with recurrent glioblastoma using hypofractionated stereotactic radiotherapy. Tumori 101: 179-184. Link: https://bit.ly/2NIp7Xu

63. Demiral S, Dincoglan F, Sager O, Gamsiz H, Gundem E, et al. (2016) Hypofractionated stereotactic radiotherapy (HFSRT) for who grade I anterior clinoid meningiomas (ACM). Jpn J Radiol 34: 730-737. Link: https://bit.ly/2YMYiYB

64. Dincoglan F, Sager O, Demiral S, Uysal B, Gamsiz H, et al. (2017) Radiosurgery for recurrent glioblastoma: A review article. Neurol Disord Therap 1: 1-5. Link: https://bit.ly/2CMaHDk

65. Demiral S, Dincoglan F, Sager O, Uysal B, Gamsiz H, et al. (2018) Contemporary Management of Meningiomas with Radiosurgery. Int J Radiol Imaging Technol 4: 041. Link: https://bit.ly/3geL8JN

66. Dincoglan F, Sager O, Demiral S, Uysal B, Gamsiz H, et al. (2019) Fractionated stereotactic radiosurgery for locally recurrent brain metastases after failed stereotactic radiosurgery. Indian J Cancer 56: 151-156. Link: https://bit.ly/2BmI8fv

67. Dincoglan F, Sager O, Uysal B, Demiral S, Gamsiz H, et al. (2019) Evaluation of hypofractionated stereotactic radiotherapy (HFSRT) to the resection cavity after surgical resection of brain metastases: A single center experience. Indian J Cancer 56: 202-206. Link: https://bit.ly/3dLiD4z

68. Leksell L (1983) Stereotactic radiosurgery. J Neurol Neurosurg Psychiatry 46: 797-803. Link: https://bit.ly/3eRGBg8

69. Mindus P, Bergström K, Levander SE, Norén G, Hindmarsh T, et al. (1987) Magnetic resonance images related to clinical outcome after psychosurgical intervention in severe anxiety disorder. J Neurol Neurosurg Psychiatry 50: 1288-1293. Link: https://bit.ly/2VtYwl8

70. Mindus P, Rasmussen SA, Lindquist C (1994) Neurosurgical treatment for refractory obsessive-compulsive disorder: implications for understanding frontal lobe function. J Neuropsychiatry Clin Neurosci 6: 467-477. Link: https://bit.ly/2Zp13Oz

71. Lasak JM, Gorecki JP (2009) The history of stereotactic radiosurgery and radiotherapy. Otolaryngol Clin North Am 42: 593-599. Link: https://bit.ly/2VszKlh

72. Castle D, Bosanac P, Rossell S (2015) Treating OCD: what to do when first-line therapies fail. Australas Psychiatry 23: 350-353. Link: https://bit.ly/2BSlaLQ

73. Greenberg BD, Price LH, Rauch SL, Friehs G, Noren G, et al. (2003) Neurosurgery for intractable obsessive-compulsive disorder and depression: critical issues. Neurosurg Clin N Am 14: 199-212. Link: https://bit.ly/2NIMuQO

74. Copetti ME, Lopes AC, Requena G, Johnson NSI, Greenberg BD, et al. (2020) Obsessive-Compulsive Personality Symptoms Predict Poorer Response to Gamma Ventral Capsulotomy for Intractable OCD. Front Psychiatry 10: 936. Link: https://bit.ly/2BmLjDV

75. Gupta A, Shepard MJ, Xu Z, Maiti T, Martinez-Moreno N, et al. (2019) An International Radiosurgery Research Foundation Multicenter Retrospective Study of Gamma Ventral Capsulotomy for Obsessive Compulsive Disorder. Neurosurgery 85: 808-816. Link: https://bit.ly/2NG2hQ7

76. Rasmussen SA, Noren G, Greenberg BD, Marsland R, McLaughlin NC, et al. (2018) Gamma Ventral Capsulotomy in Intractable Obsessive-Compulsive Disorder. Biol Psychiatry 84: 355-364. Link: https://bit.ly/2Zp10ST

77. Paiva RR, Batistuzzo MC, McLaughlin NC, Canteras MM, Mathis M, et al. (2018) Personality measures after gamma ventral capsulotomy in intractable OCD. Prog Neuropsychopharmacol Biol Psychiatry 81: 161-168. Link: https://bit.ly/2NIVPI5

78. Sharma M, Young J, Grecula J, McGregor J, Deogaonkar M, et al. (2016) Gamma knife ventral capsulotomy for posttraumatic brain injury obsessive-compulsive disorder. Neurol India 64: 552-554. Link: https://bit.ly/38dMrFS

79. Batistuzzo MC, Hoexter MQ, Taub A, Gentil AF, Cesar RCC, et al. (2015) Visuospatial Memory Improvement after Gamma Ventral Capsulotomy in Treatment Refractory Obsessive-Compulsive Disorder Patients. Neuropsychopharmacology 40: 1837-1845. Link: https://bit.ly/2VwOakz

80. Lopes AC, Greenberg BD, Canteras MM, Batistuzzo MC, Hoexter MQ, et al. (2014) Gamma ventral capsulotomy for obsessive-compulsive disorder: a randomized clinical trial. JAMA Psychiatry 71: 1066-1076. Link: https://bit.ly/2YJY3xn

81. Spofford CM, McLaughlin NC, Penzel F, Rasmussen SA, Greenberg BD (2014) OCD behavior therapy before and after gamma ventral capsulotomy: case report. Neurocase 20: 42-45. Link: https://bit.ly/3dLixdd

82. Kondziolka D, Flickinger JC, Hudak R (2011) Results following gamma knife radiosurgical anterior capsulotomies for obsessive compulsive disorder. Neurosurgery 68: 28-32. Link: https://bit.ly/2YJPh2f

83. Taub A, Lopes AC, Fuentes D, D'Alcante CC, Mathis ME, et al. (2009) Neuropsychological outcome of ventral capsular/ventral striatal gamma capsulotomy for refractory obsessive-compulsive disorder: a pilot study. J Neuropsychiatry Clin Neurosci 21: 393-397. Link: https://bit.ly/3gaCziT

84. Lopes AC, Greenberg BD, Norén G, Canteras MM, Busatto GF, et al. (2009) Treatment of resistant obsessive-compulsive disorder with ventral capsular/ventral striatal gamma capsulotomy: a pilot prospective study. J Neuropsychiatry Clin Neurosci 21: 381-392. Link: https://bit.ly/31udGeb

85. Cecconi JP, Lopes AC, Duran FL, Santos LC, Hoexter MQ, et al. (2008) Gamma ventral capsulotomy for treatment of resistant obsessive-compulsive disorder: a structural MRI pilot prospective study. Neurosci Lett 447: 138-142. Link: https://bit.ly/3g54YXE

86. Vidal-Pérez P, Molina-Ruiz R, Spatola G, Villarreal AL, Iglesias SS, et al. (2017) Radiosurgery in Obsessive-compulsive disorder, a case report. Actas Esp Psiquiatr 45: 179-184. Link: https://bit.ly/2YMY0AZ

87. Cabrera LY, Courchesne C, Kiss ZHT, Illes J (2019) Clinical Perspectives on Psychiatric Neurosurgery. Stereotact Funct Neurosurg 97: 391-398. Link: https://bit.ly/3ifqkU7

88. Martínez-Álvarez R (2019) Radiosurgery for Behavioral Disorders. Prog Neurol Surg 34: 289-297. Link: https://bit.ly/38bMFNM

Citation: Sager O, Beyzadeoglu M, Dincoglan F, Demiral S, Uysal B, et al. (2020) Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease. J Surg Surgical Res 6(2): 100-105.DOI: https://dx.doi.org/10.17352/2455-2968.000106

89. Spatola G, Martinez-Alvarez R, Martínez-Moreno N, Rey G, Linera J, et al. (2018) Results of Gamma Knife anterior capsulotomy for refractory obsessive-compulsive disorder: results in a series of 10 consecutive patients. J Neurosurg 131: 376-383. Link: https://bit.ly/3eOFca6

90. Sheth SA (2018) Stereotactic Radiosurgical Capsulotomy for the Treatment of Refractory Obsessive-Compulsive Disorder. Biol Psychiatry 84: 320-321. Link: https://bit.ly/3icypc9

91. Richieri R, Blackman G, Musil R, Spatola G, Cavanna AE, et al. (2018) Positive clinical effects of gamma knife capsulotomy in a patient with deep brain stimulation-refractory Tourette Syndrome and Obsessive Compulsive Disorder. Clin Neurol Neurosurg 170: 34-37. Link: https://bit.ly/2NMFGkR

92. Kondziolka D, Flickinger JC, Lunsford LD (2013) Stereotactic radiosurgery for epilepsy and functional disorders. Neurosurg Clin N Am 24: 623-632. Link: https://bit.ly/2YMJQ2O

93. Lévêque M, Carron R, Régis J (2013) Radiosurgery for the treatment of psychiatric disorders: a review. World Neurosurg 80: S32.e1-9. Link: https://bit.ly/3gbPKjL

94. Sheehan JP, Patterson G, Schlesinger D, Xu Z (2013) γ knife surgery anterior capsulotomy for severe and refractory obsessive-compulsive disorder. J Neurosurg 119: 1112-1118. Link: https://bit.ly/2CL3Hqj

95. Kondziolka D, Hudak R (2008) Management of obsessive-compulsive disorder-related skin picking with gamma knife radiosurgical anterior capsulotomies: a case report. J Clin Psychiatry 69: 1337-1340. Link: https://bit.ly/2YHeL0i

96. Friehs GM, Park MC, Goldman MA, Zerris VA, Norén G, et al. (2007) Stereotactic radiosurgery for functional disorders. Neurosurg Focus 23: E3. Link: https://bit.ly/3eOF0HU

97. Kondziolka D, Flickinger JC, Niranjan A, Lunsford LD (2012) Trends and importance of radiosurgery for the development of functional neurosurgery. Surg Neurol Int 3: S3-S9. Link: https://bit.ly/2YHFyJP

98. Kondziolka D (1999) Functional radiosurgery. Neurosurgery 44: 12-20. Link: https://bit.ly/31vwJ7Y

99. Rück C, Karlsson A, Steele JD, Edman G, Meyerson BA, et al. (2008) Capsulotomy for obsessive-compulsive disorder: long-term follow-up of 25 patients. Arch Gen Psychiatry 65: 914-921. Link: https://bit.ly/3dHPabL

100. Tripathi M, Mukherjee K, Chhabra R, Radotra I, Singh AP, et al. (2014) Gamma knife for obsessive compulsive disorder: can it be detrimental? Turk Neurosurg 24: 583-586. Link: https://bit.ly/3g8RvOD

Citation: Sager O, Beyzadeoglu M, Dincoglan F, Demiral S, Uysal B, et al. (2020) Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease. J Surg Surgical Res 6(2): 100-105.DOI: https://dx.doi.org/10.17352/2455-2968.000106