**Suppl. Tab. 1** Literature Review – Published studies of patients with BSCM managed conservatively

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Conservative Management of BSCM | | | | |
| Nr. | Study | No. of patients | BSCM associated Death  No. of patients  (%) | Average follow-up time in months |
| 1 | Zimmerman et al. 1991 [1] | 8 | 1 (12.5) | ND |
| 2 | Preul et al. 1992 [2] | 5 | 0 (0%) | 30 |
| 3 | Fritschi et al. 1994 [3] | 30 | 6 (20%) | 35.7 |
| 4 | Kondziolka et al. 1995 [4] | 43 | 0 (0%) | 34 |
| 5 | Bouillot et al. 1996 [5] | 8 | 0 (0%) | 67 |
| 6 | Porter et al., 1999 [6] | 14 | 1 (7.1%) | 35 |
| 7 | Kupersmith et al. 2001 [7] | 25 | 0 (0%) | 40.8 |
| 8 | Mathiesen et al. 2003 [8] | 34 | 0 (0%) | 48 |
| 9 | Cantu et al. 2005 [9] | 25 | 0 (0%) | 60 |
| 10 | Tarnaris et al. 2007 [10] | 15 | 0 (0%) | 79.7 |
| 11 | Bhardwaj et al. 2009 [11] | 13 | 0 (0%) | ND |
| 12 | Chen et al., 2011 [12] | 17 | 0 (0%) | 40 |
| 13 | Al-Holou et al. 2012 [13] | 15 | 0 (0%) | 42 |
| 14 | Chotai et a. 2013 [14] | 5 | 0 (0%) | 48 |
| 15 | Li et al. 2014 [15] | 237 | 3 (1.3) | 78 |
| 16 | Li et al. 2014 [16] | 85 | 0 (0%) | 56.4 |
| 17 | Menon et al. 2011 [17] | 29 | 1 (3.7%) | 48.0 |
| 18 | Amato et al., 2013 [18] | 2 | 0 (0%) | 49.2 |
| 19 | Moultrie et al. 2014 [19] | 16 | 1 (6.6%) | 35 |
| 20 | Arauz et al. 2017 [20] | 51 | 5 (9.8%) | 39.6 |
| 21 | Li et al. 2020 [21] | 520 | 11 (2.1) | 57.6 |
| 22 | Current Series | 54 | 0 (0%) | 62.5 |
|  | Total, n (%) | 1251 | 29/1251 (2.3 %, 95% CI: 1.6 to 3.3) |  |

**Suppl. Tab. 2** Literature Review – Published studies of patients with BSCM managed surgically

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Surgical Treatment of BSCM | | | | |
| Nr. | Study | No. of patients | BSCM associated Death  No. of patients  (%) | Average follow-up time in months |
| 1 | Yasargil et al. 1988 [22] | 5 | 0 (0%) | ND |
| 2 | Lapras et al., 1989 [23] | 9 | 0 (0%) | ND |
| 3 | Weil et al., 1990 [24] | 6 | 0 (0%) | ND |
| 4 | Bertalanffy et al., 1991[25] | 13 | 0 (0%) | 16 |
| 5 | Fahlbusch et al., 1991 [26] | 9 | 0 (0%) | 15 |
| 6 | Pendl et al., 1991[27] | 5 | 0 (0%) | ND |
| 7 | Sakai et al., 1991 [28] | 5 | 0 (0%) | ND |
| 8 | Symon et al., 1991 [29] | 7 | 0 (0%) | 13 |
| 9 | Zimmerman et al. 1991 [1] | 16 | 0 (0%) | ND |
| 10 | Mizoi et al., 1992 [30] | 6 | 0 (0%) | ND |
| 11 | Scott et al., 1992 [31] | 4 | 0 (0%) | 57 |
| 12 | Isamat et al., 1993 [32] | 6 | 0 (0%) | ND |
| 13 | Fritschi et al., 1994 [3] | 93 | 0 (0%) | 30.3 |
| 14 | Bricolo et al., 1995[33] | 18 | 1 (6%) | ND |
| 15 | Eisner et al., 1995[34] | 9 | 0 (0%) | 6 |
| 16 | Houtteville, 1995[35] | 5 | 0 (0%) | 0 |
| 17 | Bouillot et al., 1996[5] | 17 | 2 (12%) | 51 |
| 18 | Di Rocco et al., 1997[36] | 3 | 0 (0%) | ND |
| 19 | Pechstein et al., 1997[37] | 7 | 0 (0%) | ND |
| 20 | Amin-Hanjani et al., 1998[38] | 14 | 0 (0%) | 18 |
| 21 | Chaskis et al., 1998[39] | 7 | 0 (0%) | ND |
| 22 | Fukui et al., 1998[40] | 3 | 0 (0%) | ND |
| 23 | Cantore et al., 1999[41] | 11 | 2 (18%) | 25 |
| 24 | Morcos et al., 1999 [42] | 5 | 0 (0%) | ND |
| 25 | Ziyal et al., 1999 [43] | 9 | 0 (0%) | 49 |
| 26 | Porter et al., 1999[6] | 86 | 3 (3.5%) | 35 |
| 27 | Sindou et al., 2000 [44] | 12 | 0 (0%) | 66 |
| 28 | Attar et al., 2001 [45] | 4 | 1 (25%) | ND |
| 29 | Mao et al., 2001 [46] | 14 | 0 (0%) | ND |
| 30 | Kupersmith et al., 2001 [7] | 12 | 0 (0%) | 40.8 |
| 31 | Samii et al., 2001 [47] | 36 | 0 (0%) | 22 |
| 32 | Shehab et al., 2001 [48] | 4 | 0 (0%) | ND |
| 33 | Bertalanffy et al., 2002 [49] | 24 | 0 (0%) | 6 |
| 34 | Lena et al., 2002 [50] | 7 | 1 (14.2%) | ND |
| 35 | Sandalciouglu et al., 2002 [51] | 12 | 0 (0%) | 44 |
| 36 | Vinas et al., 2002 [52] | 8 | 0 (0%) | ND |
| 37 | Esposito et al., 2003 [53] | 13 | 0 (0%) | 47 |
| 38 | Mathiesen et al., 2003[8] | 17 | 1 (5.8%) | 55 |
| 39 | Seifert et al., 2003 [54] | 4 | 0 (0%) | ND |
| 40 | Smith et al., 2003 [55] | 7 | 0 (0%) | 12 |
| 41 | Wang et al., 2003 [56] | 137 | 1 (0.7%) | 52 |
| 42 | Kikuta et al., 2004 [57] | 10 | 0 (0%) | 102 |
| 43 | Ferroli et al., 2005 [58] | 52 | 1 (1.9%) | 56 |
| 44 | Bruneau et al., 2006 [59] | 22 | 0 (0%) | 45 |
| 45 | Steiger et al., 2006 [60] | 3 | 0 (0%) | ND |
| 46 | Zausinger et al., 2006 [61] | 13 | 0 (0%) | 8 |
| 47 | Alves de Sousa, 2007 [62] | 13 | 1 (8%) | ND |
| 48 | Batay et al., 2007 [63] | 4 | 0 (0%) | ND |
| 49 | Chen et al., 2007 [64] | 7 | 0 (0%) | 3 |
| 50 | Nataf et al., 2007 [65] | 19 | 1 (5%) | ND |
| 51 | Sola et al., 2007 [66] | 17 | 0 (0%) | 44 |
| 52 | Cenzato et al., 2008 [67] | 30 | 0 (0%) | ND |
| 53 | Tarnaris et al., 2008[10] | 6 | 0 (0%) | 79.7 |
| 54 | Bhardwaj et al., 2009 [11] | 7 | 0 (0%) | ND |
| 55 | Hauck et al., 2009 [68] | 44 | 0 (0%) | 11 |
| 56 | Li et al., 2009 [69] | 37 | 0 (0%) | 22 |
| 57 | Consales et al., 2010 [70] | 4 | 0 (0%) | 48 |
| 58 | Francois et al., 2010 [71] | 9 | 0 (0%) | 102 |
| 59 | Huang et al., 2010 [72] | 22 | 0 (0%) | 49 |
| 60 | Ichinose et al., 2010 [73] | 10 | 0 (0%) | ND |
| 61 | Ohue et al., 2010 [74] | 36 | 0 (0%) | 12 |
| 62 | Chen et al., 2011[12] | 55 | 0 (0%) | 49 |
| 63 | Dukatz et al., 2011[75] | 71 | 0 (0%) | 17 |
| 64 | Menon et al., 2011[17] | 23 | 2 (8.7%) | 42 |
| 65 | Ramina et al., 2011[76] | 43 | 0 (0%) | ND |
| 66 | Steno et al., 2011[77] | 9 | 2 (22%) | ND |
| 67 | de Aguiar et al., 2012[78] | 13 | 1 (8%) | 71.3 |
| 68 | Gross et al., 2012[79] | 3 | 0 (0%) | ND |
| 69 | Sabatino et al., 2012[80] | 10 | 0 (0%) | 70 |
| 70 | Wostrack et al., 2012 [81] | 16 | 0 (0%) | 14 |
| 71 | Amato et al., 2013 [18] | 3 | 0 (0%) | 49.2 |
| 72 | Bradac et al., 2013 [82] | 37 | 2 (5.3%) | 39 |
| 73 | Chotai et al., 2013 [14] | 52 | 1 (1.9%) | 48 |
| 74 | Li et al., 2013 [83] | 242 | 2 (0.8%) | 89.4 |
| 75 | Mai et al., 2013 [84] | 22 | 0 (0%) | 26.6 |
| 76 | Pandey et al., 2013 [85] | 136 | 5 (3.7%) | 29.2 |
| 77 | Schwartz et al., 2013 [86] | 35 | 0 (0%) | 44 |
| 78 | Chen et al., 2014 [87] | 38 | 0 (0%) | 9.7 |
| 79 | Garcia et al., 2015 [88] | 104 | 1 (1%) | 18.5 |
| 80 | Sawarkar et al., 2015 [89] | 9 | 0 (0%) | 47 |
| 81 | Wang et al., 2015 [90] | 23 | 0 (0%) | 42 |
| 82 | Cornelius et al., 2016 [91] | 60 | 0 (0%) | 43 |
| 83 | Kaku et al., 2016 [92] | 16 | 0% (0) | ND |
| 84 | Zhang et al., 2017 [93] | 120 | 2 (1.7%) | 50.7 |
| 85 | Arauz et al. 2017 [20] | 48 | 1 (2.1%) | 27.8 |
| 86 | Nathal et al., 2017 [94] | 50 | 0 (0%) | 47 |
| 87 | Ren et al., 2017 [95] | 34 | 0 (0%) | 46.6 |
| 88 | Zaidi et al., 2017 [96] | 397 | 4 (1%) | 35.5 |
| 89 | Liu et al., 2018 [97] | 10 | 0 (0%) | 72 |
| 90 | Li et al. 2018 [98] | 47 | 0 (0%) | 30.6 |
| 91 | Negoto et al., 2018 | 9 | 0 (0%) | 26 |
| 92 | Tumturk et al. 2018 [99] | 4 | 0 (0%) | 40.5 |
| 93 | Xie et al., 2018 [100] | 69 | 3 (4%) | 35.3 |
| 94 | Abhinav et al., 2019 [101] | 15 | 0 (0%) | 9 |
| 95 | Gui et al., 2019 [102] | 67 | 0 (0%) | 51.7 |
| 96 | Lashkarivand et. al., 2019 [103] | 22 | 0 (0%) | 45.3 |
| 97 | Tsuji et al., 2019 [104] | 72 | 0 (0%) | 97.1 |
| 98 | Li et al. 2020 [21] | 173 | 0 (0%) | 57.6 |
| 99 | Current Series | 64 | 0 (0%) | 72.5 |
|  | Total, n (%) | 3275 | 41/3275 (1.3%, 95% CI: 0.9 to 1.7) |  |

**Suppl. Tab. 3** Causes of BSCM-associated mortality in patients managed conservatively

|  |  |  |
| --- | --- | --- |
| Causes of BSCM-associated mortality | No. of patients  (%, total n=29) | Reported Cases |
| Causes of death not further clarified – however, stated that BSCM-associated | 23 (79.3%) | [3,6,20,21] |
| Recurrent hemorrhage | 4 (13.7%) | [15,17] |
| Tectal hemorrhage with hydrocephalus | 1 (3.5%) | [1] |
| Pneumonia caused by progressive neurologic deficits from BSCM | 1 (3.5%) | [19] |
| Total, n | 29 |  |

**Suppl. Tab. 4** Causes of BSCM-associated mortality in patients managed surgically

|  |  |  |
| --- | --- | --- |
| Causes of BSCM-associated mortality | No. of patients  (%, total n=41) | Reported Cases |
| Cranial nerve palsy with respiratory failure/pneumonia | 10 (24.4%) | [[14,56,58,77,93,96,100,105] |
| Causes of death not further clarified – however, stated that deaths were attributable to surgery | 7 (17.1%) | [5,17,20,33,62,65,78] |
| Cardiopulmonary arrest | 3 (7.3%) | [6,85] |
| Rebleeding of incomplete resected BSCM | 3 (7.3%) | [8,41,50] |
| Brainstem hemorrhage/hematoma | 2 (4.8%) | [85,96] |
| Brainstem Injury | 2 (4.8%) | [85] |
| Cerebellar hematoma/hemorrhage | 2 (4.8%) | [96,105] |
| Cerebellar infarction | 2 (4.8%) | [6,100] |
| Air embolism | 1 (2.4%) | [82] |
| Brainstem venous infarction | 1 (2.4%) | [82] |
| Intracranial hematoma | 1 (2.4%) | [83] |
| Locked in syndrome | 1 (2.4%) | [85] |
| Postoperative apnea, global ischemia | 1 (2.4%) | [88] |
| Postoperative depression | 1 (2.4%) | [100] |
| Pulmonary embolism | 1 (2.4%) | [83] |
| Shunt infection | 1 (2.4%) | [41] |
| SSDH-Supratentorial subdural hematoma | 1 (2.4%) | [45] |
| Ventriculitis | 1 (2.4%) | [96] |
| Total, n | 41 |  |

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