

Table 4. Summary of experiences with intragastric balloons in terms of the incidence and predictors of early removal due to intolerance.

Study	Type of IGB	Country	Sample size	Incidence of early removal of IGB due to intolerance, no. (5)	Reason for intolerance of IGB	Predictors of intolerance of IGB
Roman et al. (2004) <sup>14</sup>	BioEnterics Intragastric Balloon (BIB)	France	176	15 (8.5%)	Vomiting, abdominal pain	Not applicable
Genco et al. (2005) <sup>15</sup>	BIB, now known as Orbera	Italy	2515	11 (0.44%)	Psychological intolerance	Not applicable
Ganesh et al. (2007) <sup>16</sup>	BIB	Singapore	20	4 (20%)	Refractory nausea, retching, epigastric discomfort	Higher early removal rate among Asian patients despite lower volume of balloon filling compared to the Caucasian experience with BIB
Imaz et al. (2008) <sup>17</sup>	BIB	Meta-analysis of 17 studies including 2 RCTs	3442	104 (3.0%)	Voluntary removal, nausea, vomiting, abdominal pain, dehydration	Not applicable
Dastis et al. (2008) <sup>18</sup>	BIB	Switzerland	100	14 (14%)	Nausea, vomiting, abdominal pain	Not applicable
Forlano et al. (2010) <sup>19</sup>	BIB	Italy	130	6 (4.6%)	Nausea, vomiting, abdominal pain	Not applicable
Lopez-Nava et al. (2011) <sup>20</sup>	BIB	Spain	714	31 (4.3%)	Psychological intolerance, gastroparesis	Not applicable
Luisa de-Castro et al. (2013) <sup>21</sup>	BIB and Heliosphere Bag balloon	Spain	91	12 (13.2%)	Psychological intolerance, persistent vomiting	Intolerance more frequent in females ( $P=0.03$ ) and in patients who complained of digestive symptoms beyond the first month ( $p=0.001$ )
Ghoneim et al. (2014) <sup>22</sup>	BIB	Egypt	101	3 (3%)	Not mentioned	Not applicable
Mitura et al. (2015) <sup>13</sup>	Orbera	Poland	57	1 (1.7%)	Persistent vomiting, dehydration, electrolyte imbalance	Not applicable
Silva et al. (2018) <sup>23</sup>	Orbera	Portugal	51	7 (13.7%)	Abdominal pain, nausea, vomiting	Not applicable

Table 4. Summary of experiences with intragastric balloons in terms of the incidence and predictors of early removal due to intolerance. (Cont'd)

Study	Type of IGB	Country	Sample size	Incidence of early removal of IGB due to no. (%)	Reason for intolerance of IGB	Predictors of intolerance of IGB
Vargas et al. (2018) <sup>24</sup>	Orbera	Minnesota (Mayo clinic's database)	321	54 (16.6%)	Symptoms necessitating early balloon removal include: vomiting (36%), nausea (21%), abdominal pain (8%), troublesome gastroesophageal reflux (8%) and a combination of above symptoms (4%)	Use of selective serotonin or serotonin-norepinephrine reuptake inhibitors (SSRI/SNRI) at time of balloon placement was associated with increased odds of early removal before 8 weeks. Aprepitant use appeared to be protective.
Fittipaldi-Fernandez (2020) <sup>25</sup>	Orbera	Brazil	5874	357 (6.1%)	Not mentioned	Not applicable
Neto et al. (2017) <sup>26</sup>	Orbera, Medicone, Silimed, Spatz, Helioscopie	Brazil	41,866	928 (2.2%)	Not mentioned	Not applicable
Schwaab et al. (2019) <sup>27</sup>	Orbera (non-adjustable) and Spatz3 (adjustable)	Brazil	470 326 Orbera 144 Spatz3	30 (6.4%) 22 (6.7%) Orbera 8 (5.6%) Spatz3	Not mentioned	Higher incidence of early removal due to intolerance for non-adjustable balloons
Machytko et al. (2017) <sup>28</sup>	Elipse	US	34	2 (5.9%)	Not mentioned	Not applicable
Al-Subaie et al. (2017) <sup>29</sup>	Elipse	Kuwait	51	5 (9.8%)	Not mentioned	Not applicable
Alsabah et al. (2018) <sup>30</sup>	Elipse	Kuwait	135	8 (5.9%)	Nausea, vomiting, abdominal pain	Not applicable
Jamal et al. (2019) <sup>31</sup>	Elipse	Kuwait	112	6 (5.4%)	Nausea, vomiting, abdominal pain	Not applicable
Ienca et al. (2020) <sup>32</sup>	Elipse	19 international centres across Europe and Middle East	1770	52 (2.9%)	Not mentioned	Not applicable
Taha et al. (2021) <sup>33</sup>	Elipse	Egypt	96	3 (3.1%)	Repeated vomiting	Not applicable
Machytko et al. (2014) <sup>34</sup>	Spatz3	Czech Republic and Manchester	77	3 (3.9%)	1 due to GERD, 2 not mentioned	Not applicable
Abu Dayyeh et al. (2021) <sup>35</sup>	Spatz3	US	187	31 (17%)	Not mentioned	Not applicable
Ibrahim et al. (2019) <sup>36</sup>	MedSil	Egypt	86	7 (8.1%)	Nausea, vomiting, abdominal pain	Not applicable

GERD: gastroesophageal reflux disease; IGB: intragastric balloon; RCTs: randomised controlled trials