

Stéphanie Racette,<sup>1</sup> B.Sc. and Anny Sauvageau,<sup>1</sup> M.D., M.Sc.

## Planned and Unplanned Complex Suicides: A 5-year Retrospective Study

**ABSTRACT:** The notion of planned and unplanned complex suicides first appeared in 1974 by Marcinkowski and, since then, no systematic study of complex suicides has been published in the English forensic literature. Here, the authors present a 5-year retrospective study of complex suicides. Nineteen complex suicides were reviewed: five unplanned and 14 planned, including the first case of an unplanned complex suicide in a woman. All cases were analyzed in terms of gender, age, methods of suicide, the presence of a suicide note, and past suicide attempts, and statistically compared with a 50-case sample of simple suicides. A further comparison was established with compiled data from the literature. Similarities were revealed regarding incidence of complex suicides, male gender predominance, and types of methods used. In contrast, results showed a higher average age for planned complex suicide victims. Finally, the authors discuss the application of the complex suicide definition.

**KEYWORDS:** forensic science, complex suicide, forensic pathology

In 1974, Marcinkowski (1) had proposed a general division of suicide. In this classification, suicides are first divided into simple versus complex, the complex one referring to suicide by a combination of more than one method. Complex suicides are then further classified as planned or unplanned. The term “planned complex suicide” stands for the combination of more than one method of suicide previously planned to prevent failure of the first method and ensure a fatal outcome (1–7). On the other hand, an unplanned complex suicide represents a case where the failure of the first method used brings the victim to subsequently come up with an alternative method of inflicting death (1–7).

In the forensic literature, few cases of unusual suicides have been reported as complex suicide (1–8) and systematic studies are rare (9,10) and even nonexistent in the English language literature. Here, we present a 5-year retrospective study of all suicide cases in our laboratory and compare our results with a meta-analysis of all published cases.

### Material and Methods

#### *Criteria for Case Selection*

In the present study, the selection criterion of complex suicide cases was the use of at least two different methods of suicide, either in a simultaneous way or according to a “domino effect.” Superficial wrist cutting or concomitant use of drugs was not considered in this study as an additional method. This issue will be discussed later.

#### *Study Group*

In a 5-year period, all autopsy cases of the forensic laboratory were reviewed, for the Quebec province (Canada). Of the total 893 suicide cases for that period, 19 were considered as complex suicides: 14 planned and five unplanned complex suicides. All

cases were reviewed in terms of gender, age, methods of suicide, the presence of a suicide note, and reported past suicide attempts.

#### *Control Group*

For comparison with complex suicides, 50 cases of randomly selected male victims of simple suicide were reviewed for the same above-mentioned characteristics. The decision to include only male victims was based on the fact that, except for one case, all of the victims of complex suicide were men (see Results).

#### *Statistical Analysis*

The comparison of each characteristic between victims of complex and simple suicide was statistically analyzed with the SPSS software, version 14.0. The single female case was excluded from the statistical analyses.

### Results

In a 5-year period, 19 cases of complex suicide (14 planned, five unplanned) were found from a total of 893 suicides, which represent about 2.1% of all suicides (1.6% planned, 0.6% unplanned). All information on each type of complex suicide (planned and unplanned) is detailed in Tables 1 and 2.

#### *Gender and Age*

The male:female ratio was of 18:1, compared with 42:1 for the victims of simple suicides for the same 5-year period (705 males and 169 females). Interestingly, all victims of planned complex suicide were of male gender. A single female case was found in the unplanned complex suicide victims.

The average age of victims of planned complex suicide was 52.3 (95% CI 44.01; 60.56) compared with 38.4 (95% CI 23.52; 54.48) for unplanned complex suicide and 40.3 (95% CI 35.92; 44.68) for the simple suicide control group. Therefore, victims of planned complex suicide were significantly older than the victims of simple suicide by more than 10 years (mean difference of 11.99 years,  $p = 0.034$ ). Victims of planned complex suicide also tend to be older than victims of unplanned complex suicide, although not

<sup>1</sup>Laboratoire de sciences judiciaires et de médecine légale, Édifice Wilfrid-Derome, 1701, Parthenais street, 12th floor, Montreal, QBC, Canada, H2K 3S7.

Received 13 May 2006; and in revised form 17 July 2006; accepted 13 Aug. 2006; published 12 Feb. 2007.

TABLE 1—Planned complex suicide victims in a 5-year period.

Case	Gender	Age	Methods	Suicide Note	Previous Attempts (Number)
1	M	70	Hanging+gunshot wound to the head	Yes	Not mentioned
2	M	31	Gunshot wound in the mouth+fire in a vehicle	No	Not mentioned
3	M	59	Gunshot wound to the head+drowning	No	Not mentioned
4	M	63	Hanging+gunshot wound to the neck	Yes	Not mentioned
5	M	47	Hanging+gunshot wound to the head	Yes	Not mentioned
6	M	46	Gunshot wound to the head+home fire	No	Not mentioned
7	M	46	Hanging+fire at victim's work place	No	Not mentioned
8	M	26	Hanging+destructive home fire (possibility of self-immolation)	No	Not mentioned
9	M	44	Hanging+gunshot wound to the chest	Yes	Not mentioned
10	M	46	Fire in a motor vehicle+stabbing to the chest	No	Yes (1)
11	M	60	Gunshot wound to the head+home fire	Yes	Not mentioned
12	M	50	Stabbing to the chest+fall from great height+drowning	Yes	Not mentioned
13	M	69	Gunshot wound to the chin+home fire	Yes	Not mentioned
14	M	75	Hanging+gunshot wound to the head	Yes	Not mentioned

M, male.

statistically significant, considering the very small number of cases in this last group ( $n = 5$ ;  $p = 0.292$ ).

#### Methods of Suicide

The most frequent combination of methods in victims of planned complex suicide consisted of hanging along with firearm use (35.7%; 5/14 cases). Interestingly, those two methods were also the most frequent methods used in cases of simple suicide (Table 3).

#### Suicide Note and Previous Suicide Attempts

The presence of a suicide note on the scene was noted in eight of the 14 planned victims (57.1%), in one of the five unplanned victims (20.0%), and in 15 of the 50 simple suicide cases (30.0%). For all types of victims, a Pearson's  $\chi^2$  test did not reveal any significant difference for the presence of a suicide note ( $p = 0.1689$ ).

Reported previous attempts were known for only one of the 14 planned victims (7.1%), for one of the five unplanned victims (20.0%), and for six of the 50 simple suicide cases (12.0%). For all types of victims, a Pearson's  $\chi^2$  test did not reveal any significant difference for the reported previous attempts ( $p = 0.7000$ ).

#### Discussion

In the forensic literature, complex suicides have been reported to account for about 1.5–5.0% of all suicides (2,9,10). This is in keeping with our 2.1% incidence. To compare our case series with the other cases in the literature, we have compiled all reported cases of complex suicides in the English literature (Table 4) (1–5,7,12–21).

#### Gender and Age

In terms of gender, definite male sex predominance is observed throughout the previous case reports of complex suicides. As a matter of fact, only three cases out of 26 complex suicides consisted of female victims (12,13,19), all of those female victims being of the planned type. Our results are in agreement with this definite male sex predominance. However, our one female victim was in the unplanned group, this case being the first reported case of an unplanned complex suicide in a female.

As for the age factor, victims of planned complex suicide in our series are significantly older than simple suicide victims, being mainly in their fifth decade, and also tend to be older than unplanned complex suicide victims. This age distribution seems to be slightly different from the picture given by the compiled case reports.

#### Methods of Suicide

The individual methods used for complex suicides have been reported not to differ from those used in simple suicides (2). In fact, the use in complex suicide of two frequently encountered methods in simple suicide is generally observed (2,7). This was also the case in the present study.

Bonhert reported that planned complex suicides often differ from unplanned complex suicides in the number of methods used: victims of planned complex suicide rarely use more than two methods, while several methods, up to five, have been reported for unplanned complex suicides (2,9). However, this was not observed in our study (Table 3).

#### Suicide Note and Previous Suicide Attempts

In our series, a suicide note was present in 57.1% of planned complex suicides. Although not statistically significant, this

TABLE 2—Unplanned complex suicide victims in a 5-year period.

Case	Gender	Age	Methods	Suicide Note	Previous Attempts (Number)
1	M	31	Drowning+sharp wounds to chest and abdomen	No	Yes (1)
2	M	38	Hanging+fall from height+drowning	Yes	Not mentioned
3	M	46	CO intoxication in VA+sharp wounds to neck and chest+hanging	No	Not mentioned
4	F	36	Sharp wounds to the chest+self-immolation	No	Yes (ND)
5	M	41	Double gunshot wounds to the head+drowning	No	Not mentioned

M, male; F, female; ND, no data.

TABLE 3—Compiled method(s) used for all types of suicide.

Suicide	Method(s)	Number of Cases	%
Planned	Hanging+gunshot wound	5	35.7
	Gunshot wound+fire	4	28.6
	Hanging+fire	2	14.3
	Stabbing+fall from great height+drowning	1	7.1
	Gunshot wound+drowning	1	7.1
	CO intoxication in motor vehicle+stabbing	1	7.1
	Total	14	100.0
Unplanned	Hanging+fall from height+drowning	1	20.0
	Drowning+sharp wounds	1	20.0
	CO intoxication in motor vehicle+sharp wounds+hanging	1	20.0
	Double gunshot wounds+drowning	1	20.0
	Sharp wounds+self-immolation	1	20.0
	Total	5	100.0
	Simple	Gunshot wound	22
Hanging		14	28.0
Drowning		4	8.0
Drug intoxication		3	6.0
Fall from height		2	4.0
Self-immolation		1	2.0
CO intoxication		1	2.0
Incised wound		1	2.0
Moto-vehicle versus tree		1	2.0
Plastic bag over head		1	2.0
Total		50	100.0

percentage was higher in comparison with simple suicides (30.0%) and unplanned complex suicides (20.0%). This relatively high frequency of a suicide note in planned complex suicide is also observed in data from compiled previous case reports: a suicide note was mentioned in eight of the 20 reported cases (40.0%) of planned complex suicide. When present, the suicide note can be very useful in the investigation. By explaining the different steps and methods that the victim planned to use, the note reinforces not

only the suicide as the manner of death but also the planned type of this complex suicide. As for the previous suicide attempts, they are uncommon in the compiled case reports in the literature as well as in our case series.

*Comments on the Definition of Complex Suicide and Its Application*

The definition of complex suicide as the use of more than one method to induce death has been widely accepted in the forensic literature (1–8). As it implies more than one method, it would be equally right to say that it refers to the use of at least two different methods. In that sense, the authors disagree, considering the use of two firearms at the same time as a special type of complex suicide. Indeed, even if the use of more than one firearm is exceptional and worth reporting, the authors think it is not accurate to place these types of cases in complex suicide, as it does not refer to two different methods. Furthermore, the switch from superficial wrist cutting to stabbing wounds does not appear to the authors as a valuable application of the definition, but rather as the manifestation of hesitation marks. Also, we did not consider concomitant use of drug and/or medicine as an additional method. In fact, the combination of drug and/or medicine is so common with otherwise simple suicides that we think this inclusion lessens the reach of the definition of complex suicide. As discussed by Bohnert (2), it is difficult to distinguish whether one motive for the use of hypnotics or other sedative drugs may be the suicidal person’s intention to avoid painful suffering as soon as the principal method is activated or whether the primary intention may have been death by intoxication *per se*, with the second method serving as a safeguard in case the first method fails. While the latter situation would indeed fall into the category of complex suicides, the first one would not. To avoid such confusion, we think that it would be better to distinguish “drug-related complex suicide” and

TABLE 4—Compiled cases of complex suicide in the English language literature\*.

Reference	# Cases	Gender	Age	Planned (P)/ Unplanned (U)	Methods	Suicide Note	Previous Attempts
12	3	M	46	P	Drug intoxication+wrist cutting+hydrochloric acid ingestion	No	ND
		M	34	P	Hanging+stabbing wound to the chest	No	ND
		F	22	P	Hanging+rodenticide ingestion	No	Yes (1)
2	2	M	72	P	Hanging+gunshot wound to the head	ND	ND
		M	28	U	Fall from height+wrist cutting	ND	ND
7	2	M	65	P	Gunshot wound to the head+self-immolation	Yes	ND
		M	43	P	Double gunshot wounds+self-immolation	ND	ND
13	4	M	17	P	Self-immolation+fall from height	No	ND
		F	42	P	Self-immolation+fall from height	No	Yes (2)
		M	71	P	Self-immolation+shot to the head	Yes	ND
		M	33	U	Self-immolation+wrist cutting+gunshot wound to the head	Yes	ND
5	1	M	77	P	Gunshot wound to the head+insecticide ingestion	Yes	ND
4	3	M	40	P	Hanging+gunshot wound to the head	Yes	ND
		M	50	P	Gunshot wound to the head+fall in the water	ND	ND
		M	ND	P	Hanging+self-immolation	ND	ND
14	1	M	ND	P	Hanging+self-immolation	ND	ND
3	1	M	29	P	Hanging+gunshot wound to the head	ND	Yes (2)
15	1	M	ND	U	Hanging+self-immolation	No	ND
16	2	M	33	P	Gunshot wound to the head in a driving motor vehicle	Yes	ND
		M	24	P	Gunshot wound to the head in a driving motor vehicle	Yes	Yes (3)
17	1	M	49	P	Hanging+stabbing wounds to the neck and chest	Yes	ND
18	1	M	37	ND	Stabbing wounds to the chest+self-immolation	ND	ND
19	1	F	18	P	Gunshot wound to the thorax in a driving motor vehicle	ND	Yes (2)
20	1	M	20	U	Hanging+drug ingestion+wrist cutting+gunshot wound to the head	No	ND
21	1	M	37	U	Automobile crash+stabbing wounds to the chest	ND	Yes (1)
1	1	M	23	P	Hanging+electrocution	Yes	ND

\*References are listed by numbers. M, male; F, female; ND, no data.

“nondrug-related complex suicide.” By excluding combination of drug and/or medicine as an additional method, the aim of the present study was therefore “nondrug-related complex suicides.”

#### *Comments on the Application of the Definitions of Planned and Unplanned Complex Suicide*

A major difficulty arises in the application of the definitions of planned versus unplanned complex suicide. The distinction between these two types of complex suicide being largely based on the victim's intention, its application is sometimes difficult. As a matter of fact, a complex suicide will be considered as planned if the combination of methods has been planned from the first place, while it will be considered as unplanned if the following methods were added upon failure of the first one. For example, both case #3 from Table 1 and case #5 from Table 2 used a combination of gunshot wounds to the head with drowning. However, in the latter, the victim first shot himself twice and then turned to drowning upon failure of the first method (11). In contrast, the other victim decided from the first place to shoot himself from a boat, knowing his body would then fall in open water and drown.

Another problem related to the definition being based on the suicidal person's intention and not on the actual result is that the final cause of death is not the key element in the application of those definitions. It is in fact really important not to confuse suicidal methods with actual cause of death. This principle is relatively easy to understand in the case of unplanned complex suicides: a victim tries a first method and, after the failure of this method, turns to other means. In such a case, there are two methods but only one contributing to the cause of death, the first one having failed. However, this intention element can sometimes cause confusion in the case of planned complex suicide. For example, if someone shot himself immediately after setting fire to his surroundings, like in case #2 from Table 1, it would be considered as a planned complex suicide whether or not each method has contributed to the cause of death. The importance of considering the methods used by the victim and not the final cause of death is primordial in the definition of complex suicide.

Therefore, the victim's intention analysis is central to the classification of the types of complex suicides and it cannot be emphasized enough that an extensive investigation of both the scene and the victim's own history must be correlated with the autopsy findings.

#### **Conclusion**

In keeping with the forensic literature, this 5-year retrospective study on complex suicides has revealed an incidence of 2.1% of all suicides, with a clear male gender predominance. The methods used in the 19 cases included herein were frequently found in victims of simple suicide, again corroborating the literature data. The frequency of a suicide note on the scene and the reported past suicide attempts were not different from the general picture of the compiled literature.

In contrast, our study unveiled the first reported case of unplanned complex suicide in a woman. Also, the age distribution, especially for planned complex suicide victims, was different from what has been generally seen in the literature. Indeed, the victims of planned complex suicide in this study were older than simple suicide victims. In terms of the number of methods used, our study did not reveal that victims of unplanned complex suicide

use more methods than planned complex suicide ones, as previously reported in the literature. Finally, the authors offered a critical perspective of the application of the definition of complex suicide.

#### *Acknowledgment*

The authors would like to thank M. Miguel Chagnon and his students of the Service de Consultation en Méthodes Quantitatives (SCMQ) of the Department of Mathematics and Statistics, University of Montreal, for their tremendous help.

#### **References**

- Marcinkowski T, Pukacka-Sokolowska L, Wojciechowski T. Planned complex suicide. *Forensic Sci* 1974;3(1):95–100.
- Bohnert M. Complex suicides. In: Tsokos M, editor. *Forensic pathology reviews*, Vol. 2. Totowa, NJ: Humana Press Inc, 2005:127–43.
- Blanco-Pampin JM, Suarez-Penaranda JM, Rico-Boquete R, Concheiro-Carro L. Planned complex suicide. An unusual suicide by hanging and gunshot. *Am J Forensic Med Pathol* 1997;18(1):104–6.
- Cingolani M, Tsakri D. Planned complex suicide: report of three cases. *Am J Forensic Med Pathol* 2000;21(3):255–60.
- Padosch SA, Schmidt PH, Madea B. Planned complex suicide by self-poisoning and a manipulated blank revolver: remarkable findings due to multiple gunshot wounds and self-made wooden projectiles. *J Forensic Sci* 2003;48(6):1371–8.
- Bohnert M, Pollak S. Kombinierte Suizide eine Literaturübersicht. *Arch Kriminol* 2004;213(5–6):138–53.
- Turk EE, Anders S, Tsokos M. Planned complex suicide. Report of two autopsy cases of suicidal shot injury and subsequent self-immolation. *Forensic Sci Int* 2004;139(1):35–8.
- Taff ML, Boglioli LR, Danto BL. Planned complex suicide. *Am J Forensic Med Pathol* 1998;19(2):194.
- Pollak S. Statistisk und Phänomenologie kombinierter Selbsttötungen und anderer suizidaler Mehrfachschädigungen im urbanen Bereich. *Arch Kriminol* 1978;161:20–30, 68–81.
- Hofmann V, Herber F. Über kombinierte and protrahierte Suizide. *Kriminal forens Wiss* 1984;53/54:83–8.
- Racette S, Sauvageau A. Suicide by drowning after two gunshots to the head: a case report. *Med Sci Law*. In press.
- Altun G. Planned complex suicide: report of three cases. *Forensic Sci Int* 2006;157:83–6.
- Bohnert M, Rothschild MA. Complex suicides by self-incineration. *Forensic Sci Int* 2003;131:197–201.
- Tatsumi S, Noda H, Sugiyama S. An autopsy case of a charred body which committed suicide after arson. *Legal Med* 2000;2:110–4.
- Leth P, Hart-Madsen M. Suicide by self-incineration. *Am J Forensic Med Pathol* 1997;18(2):113–8.
- Murphy GK. Suicide by gunshot while driving a motor vehicle – two additional cases. *Am J Forensic Med Pathol* 1997;18(3):295–8.
- Maeda H, Imura M, Higuchi T, Noguchi K. An autopsy case of suicide by hanging with multiple stab wounds of the neck and chest. *Med Sci Law* 1993;33(1):67–9.
- Shkrum MJ, Johnston KA. Fire and suicide: a three-year study of self-immolation deaths. *J Forensic Sci* 1992;37(1):208–21.
- Murphy GK. Suicide by gunshot while driving an automobile. *Am J Forensic Med Pathol* 1989;10(4):285–8.
- Danto BL, Taff ML, Mirchandani HG. Cases of self-destructive behaviour involving multiple methods during a single episode. *Am J Forensic Psychiatry* 1985;6:38–45.
- Imajo T. Suicide by motor vehicle. *J Forensic Sci* 1983;28(1):83–9.

Additional information and reprint requests:

Anny Sauvageau, M.D., M.Sc.

Laboratoire de sciences judiciaires et de médecine légale

Édifice Wilfrid-Derome

1701, Parthenais street, 12th floor

Montreal, QBC

Canada H2K 3S7

E-mail: a.sauvageau@msp.gouv.qc.ca